



# Photo Series for Appraising Timber Slash in Montana



First printing in 1989  
Second printing in 2011



Third printing in 2021



United States  
Department of  
Agriculture

Natural Resources Conservation Service



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Acknowledgements

The Forestry Division, Montana Department of State Lands (DSL), developed this photo series. We would like to extend a special thanks to all the DSL personnel who helped choose the sites and guide us in developing this publication. We especially acknowledge the technical assistance that Dr. James K. Brown, William C. Fischer and Dennis Simmerman provided; all are employed by the Intermountain Fire Science Laboratory. Kelly R. Close, Bob A. Martin, Mike McGouldrick, and Douglas R. Napierala diligently collected the data and pictures, and compiled much of the data. Katie Mac Millen served as document editor. Mark Lennon was the project leader.

The third printing (2021) was completed by the USDA Natural Resources Conservation Service with permission from the Montana Department of Natural Resources and Conservation.

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## **Purpose of the Photo Series**

We constructed this photo series booklet to help the forest landowner, contractor and forester evaluate the fire hazard of timber slash associated with forest cutting operations. The booklet shows examples of slash conditions which either pass or fail the State's 4-foot flame length standard. If slash conditions don't pass the standard, the photos can be used to decide how to treat the slash and which areas should receive higher priority. The booklet should help forest landowners and contractors to comply with the State timber slash law.

DSL defines timber slash as the woody debris that is dropped on the forest floor during timber harvesting operations, other silvicultural practices and land clearing operations. Timber slash consists of stems, branches, twigs and needles left behind after cutting operations. This debris lies over other woody debris that has accumulated naturally or from previous cutting operations. For this photo series, we have included all sound material and needles in the reported fuel loadings for each plot.

### **Preface**

Department of State Lands personnel collected the data in this photo series, and used Rothermel's BEHAVE fire prediction model to calculate the results. The model predicts flame lengths for various slash conditions. The model cannot say what will actually happen, but can usefully approximate how a fire will be likely to behave.



## Definitions

**Flame Length:** The average length of flame at the head of the fire, either vertical or slanted by wind, from the center of the flaming zone at the upper surface of the slash to the tip of the flame (Koski and Fischer 1979).

The listings below describe the fire situation for various flame lengths:

Flame Length	Fire Situation
$\leq 1$ ft	Marginal burning. Few fires exist at this level.
2-3 ft	Easy to attack and control. People can normally work right up to the edge of the fire.
4 ft	This is the approximate limit beyond which people are unable to work at the fire edge. Hand crews may find it difficult to attack the fire directly due to the intense heat.

**Fire Break:** A strip of land where all vegetative material has been removed down to bare mineral soil.

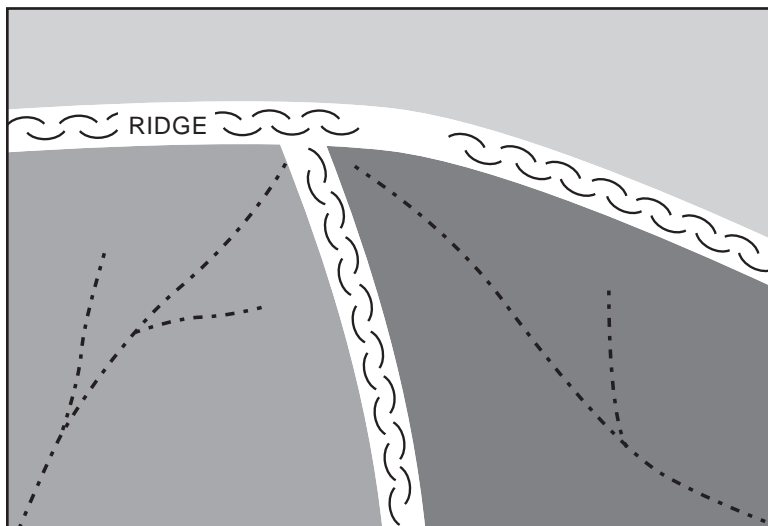
**Fuel Break:** A strip of land where all down or dead woody material with a diameter of  $\leq 3$  inches has been removed.

**Legal Public Access:** The legal right for the public to use. In this case, roads such as:

- Federal, state, or county roads;
- Roads on which federal, state, or county government has a cost share agreement;
- Private roads that have been opened to the public.

**Standard Day:** The BEHAVE model predicted the flame lengths in this book for a “standard day.” A standard day is defined as 87°F, 17% relative humidity, with winds of 12 miles/hour at 20 feet above the ground.

**Photo Unit (like-slash area):** The largest area of like-slash which can be represented by a selected photo. It is an area within a cutting or thinning unit where the type and distribution of slash is the same or very similar (fig. 1).



*Fig. 1. Photo Units (Like-slash areas) – areas of same or similar slash on the cutting unit.*

## Using the Photos

The sites and photos were chosen to illustrate both the amount and the continuity of slash. The photographs will not apply to all situations. Use the photos and data sheets together to best determine the potential flame length.

There are two series of photos and accompanying data sheets, the first for short needled conifers and the second for long needled conifers. The series apply only to conifer slash in Montana. Some photos show a mixture of short and long needled species. In these cases, the photo will appear in the series that matches the predominant species.

Within each series, we have arranged the photos in the order of the flame length predicted, from the lowest to the highest. To predict the flame length, we analyzed only the fuels within the outlined plot boundary.

## **The Photo – Describing the Fuels**

Each photo shows several important fuel characteristics:

1. Sample plot – hand-drawn lines outline each sampling area.
2. Approximate amount of fuel in different diameter classes – the BEHAVE fire prediction model uses only fuels 3" or less in diameter to predict flame length. The fine woody fuels that are in the 0-1" diameter class are the most important for determining the flame lengths.
3. General condition of the fuel – e.g., sound, rotten, etc.
4. Continuity and distribution of fuel over the plot.
5. Fuel depth – each red or white segment on the plot marker = 1 foot.

## **The Data Sheet**

Each accompanying data sheet describes the fuel in the plot as follows:

1. Needle Class: long needle or short needle.
2. Down and Dead Fuel Loading: loadings by size class and tons/acre of the residue species.
3. Slash Composition: the percent of each species on the site.
4. Photo Site Data: stand location, slope, aspect, yarding method, slash treatment, and flame length.
5. Slash Depth Distribution: how the slash depths vary over the site. Field personnel measured slash depths at ~72 scattered points on each site. The bar graph on the data sheet shows the percent of total sample points in each depth class; this indicates how the fuel depths vary over the site as well as the overall depth of slash. This information applies only to the plot outlined in the photo.
6. Potential Flame Lengths: The flame lengths that the BEHAVE model predicted for the slash shown in the outlined plot on the photos, at given slopes, on a standard day. Once you have chosen a photo or photos that represent your site, use this table to determine the flame length for that slope on your site.

## Matching the Photos to the Field

**Determining Photo Units:** First, look over the slash in the cutting area. If the type and distribution of slash varies across the cutting area, divide the area into photo units (like-slash areas). These are areas where the slash is more or less the same.

**Choosing the Photo:** Scan through the series and choose the photo that most nearly matches what you see on your site. Then read the data sheet for the photo. On the ground, the tonnage of slash in the needle class, the tonnage in the 0-1" diameter class, and the overall slash depth are the three factors that most strongly influence the potential flame length. Make sure the photo's data and the slash on the ground also match. If the data sheet does not represent the on-the-ground situation very well, look for a similar photo and check its data.

**Interpreting the Data Sheets:** Once you have chosen a photo, estimate the percent (%) slope on your site. Use the data sheet to find the flame length for the site's slope. If the slope falls between two slope percentages at the top right of the data sheet, interpolate the flame length for your site from between the two.

**Interpolating Photos:** Perhaps no one photo adequately represents what you see. If this is the case, choose two similar photos that bracket the fuel conditions on your site. Then interpolate between the values on the data sheets accompanying the two photos.

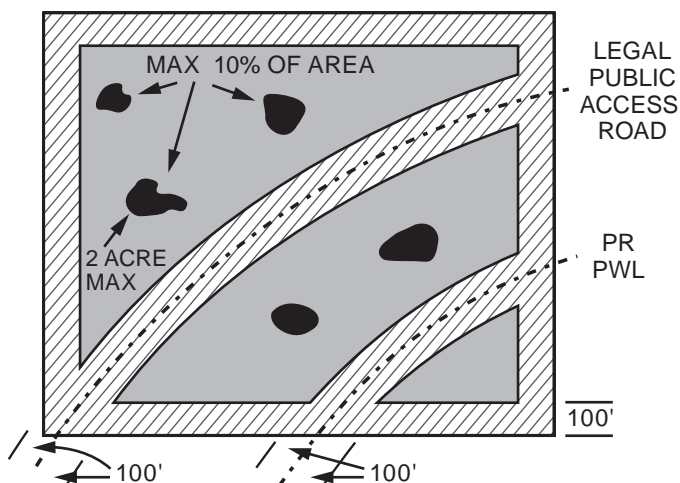
**Using the 10% Guideline:** Slash on some cutting units will be made up of scattered fuel concentrations with little or no slash between them. In these situations, choose a photo that best represents the fuel loading in the concentrations. Use that photo's data sheet to decide if the slash meets the 4-foot flame length standard. If the slash concentrations exceed 10% of the photo units (like-slash area), then the concentrations need to be treated to meet the 4-foot flame length standard.

## State Law - Hazard Reduction Standards

The state has developed standards for reducing slash in order to reduce fire hazards to an acceptable level. The following sections explain those hazard reduction standards.

**General Standard:** You must reduce slash to a level at which a fire would burn with a flame length of 4 feet or less – as predicted by the BEHAVE model – under conditions similar to a standard day (see definitions).

- 90% of the photo unit (like-slash area) must meet the 4-foot flame length standard. Within the like-slash area, no area larger than two acres can exceed the standard.
- You must meet the 4-foot flame length standard for 100 feet inside the perimeter of a cutting unit and within 100 feet of all roads of legal public access that pass through the unit, all active railroad right-of-ways and all corridors for live overhead power lines (fig. 2).



*Fig. 2. Minimum clearances from unit perimeter, public roads, railroad right-of-ways, corridors beneath live overhead power lines (100' in each case).*

## High Value/High Risk Area (HVA):

In the following situations, you must meet the described standard instead of the 4-foot standard.

1. **Residential structures:** If part of a cutting unit boundary lies within 1,000 feet of a residential structure used for human habitation, then pile, chip, bury, or remove all slash for 100 feet inside that part of the boundary or within 100 feet of the structure. You must do so within 60 days of creating the slash, or by May 1st for winter logging (fig. 3). Burn all piles within 18 months. The Department may approve other equivalent measures.

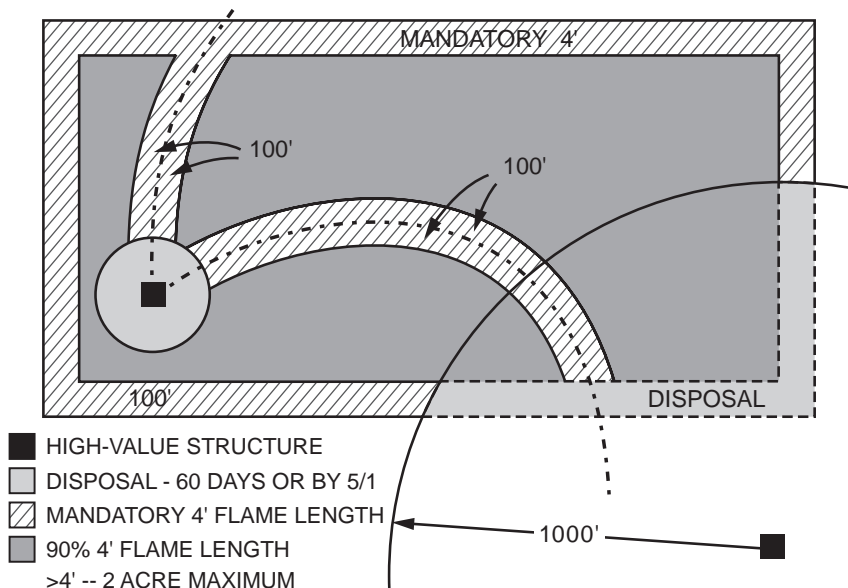
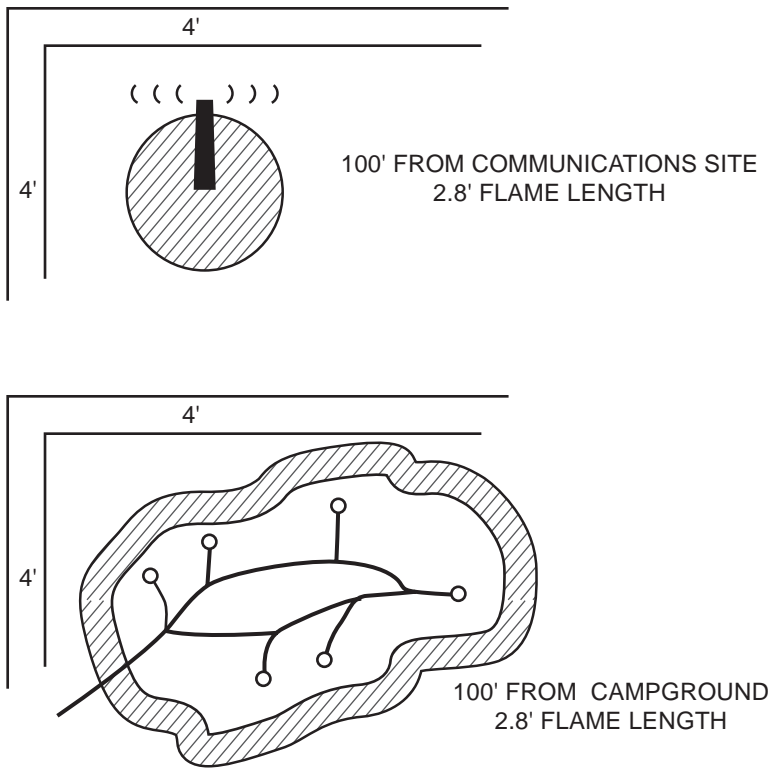


Fig. 3. Minimum clearances near residential structures.

2. **High-Value Communications Structures:** Treat all slash within 100 feet of high value communications structures, such as microwave stations, radio relay stations, and TV translators, to meet a 2.8-foot flame length standard. Use the applicable photo and data sheet to find conditions for a 2.8-foot flame length (fig. 4).
3. **Public Campgrounds:** Treat all slash within 100 feet of public campgrounds or day use areas to meet a 2.8-foot flame length standard, within 60 days of creating it, or by May 1st for winter logging. Use the applicable photo and data sheet to find conditions for a 2.8-foot flame length (fig. 4).

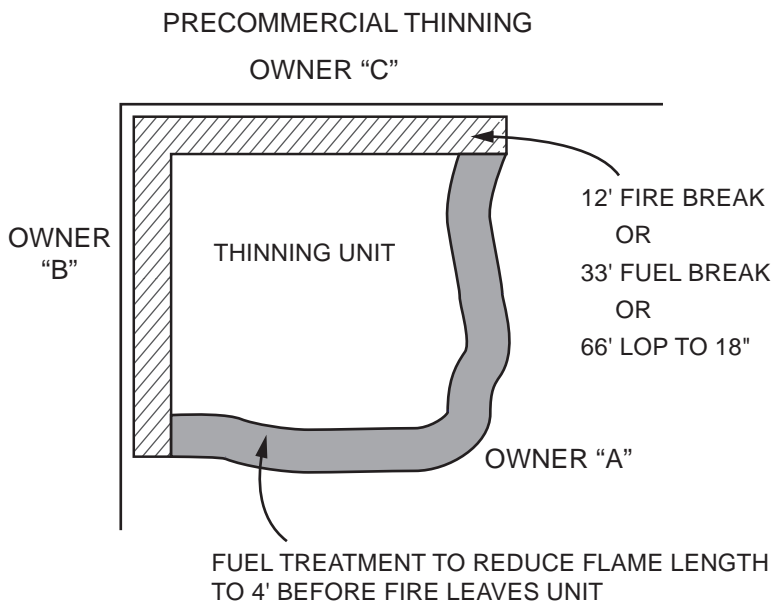


*Fig. 4. How to modify fuels around (a) communication sites; (b) campgrounds. Modify slash to ensure maximum potential flame length of 2.8 feet.*

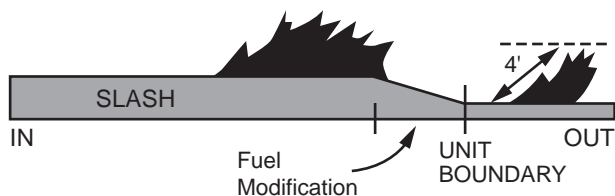
### Special Management Area (SMAs)

Where special management areas are designated, the following standards apply instead of the 4-foot flame length standard:

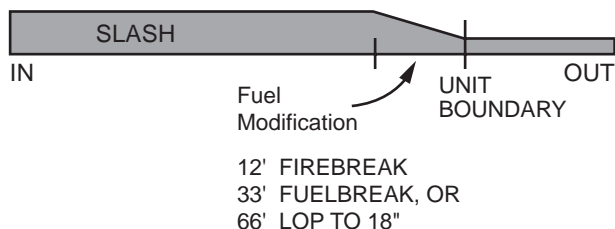
1. **Precommercial thinning units:** Reduce the slash at the perimeter of precommercial thinning units so that a fire passing over the perimeter will be reduced to a flame length of 4 feet or less. This gives firefighters a reasonable chance to contain the fire. If the boundary of the unit coincides with a change in land ownership, build either a 12-foot fire break, a 33-foot fuel break, or lop the slash to a height of 18 inches for 66 feet inside the unit boundary (fig. 5). The Department may approve exceptions.



(A) WITHIN SAME OWNERSHIP



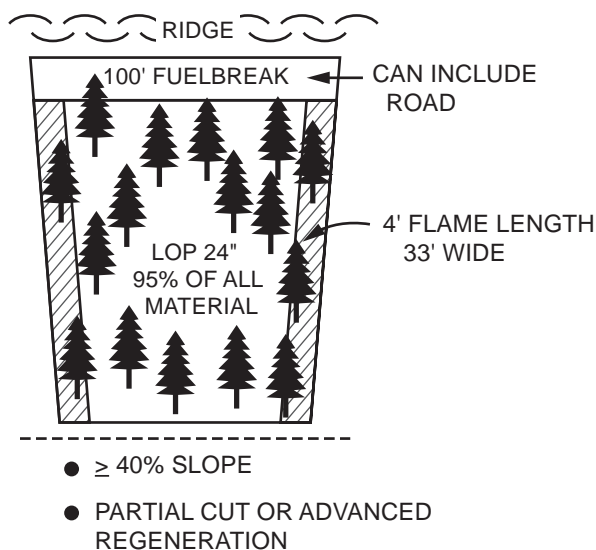
(B) DIFFERENT OWNERSHIP



*Fig. 5. How to modify fuels on precommercial thinning units. Modify slash on the perimeter to decrease flame length to 4 feet or less. Build fire or fuel breaks or lop to the text's specifications where boundary of unit coincides with ownership change.*



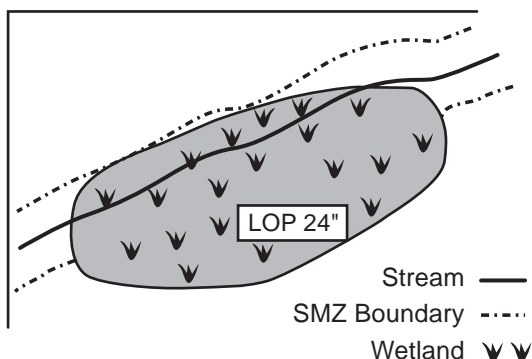
2. **Steep slope/partial cut units:** When there is advanced regeneration or a manageable overstory that the owner wishes to save, the landowner may designate the portion of a partial cut which occurs on a slope greater than 40% as an SMA. Instead of the 4-foot flame length standard, the harvest unit must meet the following standards:
- Lop the entire SMA to reduce 95% of all material 3" or less in diameter to a height of 24" or less.
  - Treat the boundaries of the SMA as follows:
    - Make a 100-foot-wide fuel break at the top of the unit.
    - Reduce the slash at the sides of the unit to meet the 4-foot standard for a minimum width of 33 feet.
    - If someone else owns the land on the other side of the bottom boundary, then reduce the slash as you would for the side (fig. 6).
  - You may lop, build fuel breaks or otherwise reduce fuels only on land owned by the company or person doing the harvesting. The Department can approve exceptions.



*Fig. 6. Partial cuts or advanced regeneration on steep slopes*

### 3. Wetlands, Streamside Management Zones (SMZs):

The landowner may designate as an SMA any portion of a harvest unit which lies in a wetland or SMZ, where BMPs do not allow equipment. Instead of meeting the 4-foot flame length standard, lop the SMA to reduce 95% of all material 3" or less in diameter to a height of 24" or less (fig. 7).



*Fig. 7. In wetlands or Streamside Management Zones (SMZs), where BMPs don't allow equipment, lop all slash to 24" or less.*

## Photo Series Development

The Forestry Division developed this photo series using techniques recommended by the Intermountain Fire Sciences Laboratory. DSL:

1. Chose timber slash areas to represent the range of fuel situations which exist at cutting operations in Montana.
2. Laid out and photographed sample plots following procedures suggested by Fischer (1981).
3. Measured fuel loadings using techniques described by Brown in "Handbook for Inventorying Downed Woody Material" (1974).
4. Calculated potential fire behavior using Rothermel (1972) and Albini's (1976) modeling techniques, and estimated slash depths using procedures developed by Albini and Brown (1977).

## Publications Cited

- Albini, Frank A. 1976. Estimating Wildfire Behavior and Effects. USDA FS General Technical Report INT-30. Intermountain Forest & Range Experiment Station, Ogden, Utah. 92 pp.
- Albini, Frank A., and Brown, James K. 1978. Predicting Slash Depth for Fire Modeling. USDA FS Research Paper INT-206. Intermountain Forest and Range Experiment Station, Ogden, Utah. 22 pp.
- Brown, James K. 1974. Handbook for Inventorying Downed Woody Material. USDA FS General Technical Report INT-16. Intermountain Forest & Range Experiment Station, Ogden, Utah. 24 pp.
- Fischer, William C. 1981. Photo Guides for Appraising Downed Woody Fuels in Montana Forests: How They Were Made. USDA FS Research Note INT-299. Intermountain Forest & Range Experiment Station, Ogden, Utah. 12 pp.
- Koski, Wayne, and Fischer, William C. 1979. Photo Series for Appraising Thinning Slash in North Idaho. USDA FS General Technical Report INT-46. Intermountain Forest & Range Experiment Station, Ogden, Utah. 49 pp.
- Rothermel, Richard C. 1972. A Mathematical Model for Predicting Fire Spread in Wildland Fuels. USDA FS Research Paper INT-115. Intermountain Forest & Range Experiment Station, Ogden, Utah. 40 pp.

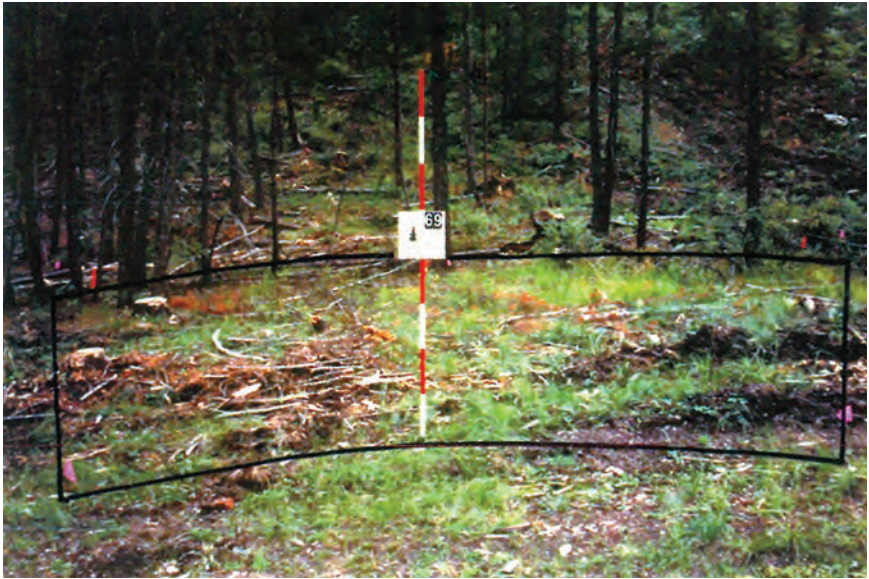




## Short-Needled Series

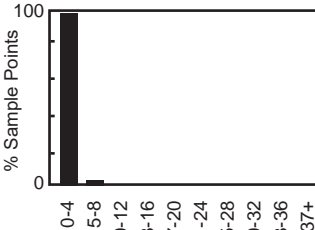






Stand Number 69

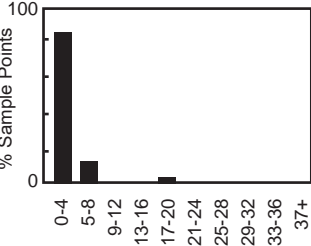
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Dry Gulch, Missoula, MT	% Slope	Flame Length (ft.)
Needles	0.0	Terrain Slope (%)	0	0	1
0-0.25	0.6	Aspect	(flat)	15	1
0.25-1.0	3.6	Yarding Method	Ground lead	30	1
1.0-3.0	2.5	Slash Treatment	Dozer piled	40	1
Subtotal 0-3	6.7	Flame Length (ft.)	1	60	1
Subtotal 3+	1.2	<div>Slash Depth Distribution (in.)</div> 		90	1
Total	7.9			<div>Comments: Residual slash from piling operations.</div>	
Slash Composition					
Species	Percent				
Douglas-fir	95				
Ponderosa pine	5				

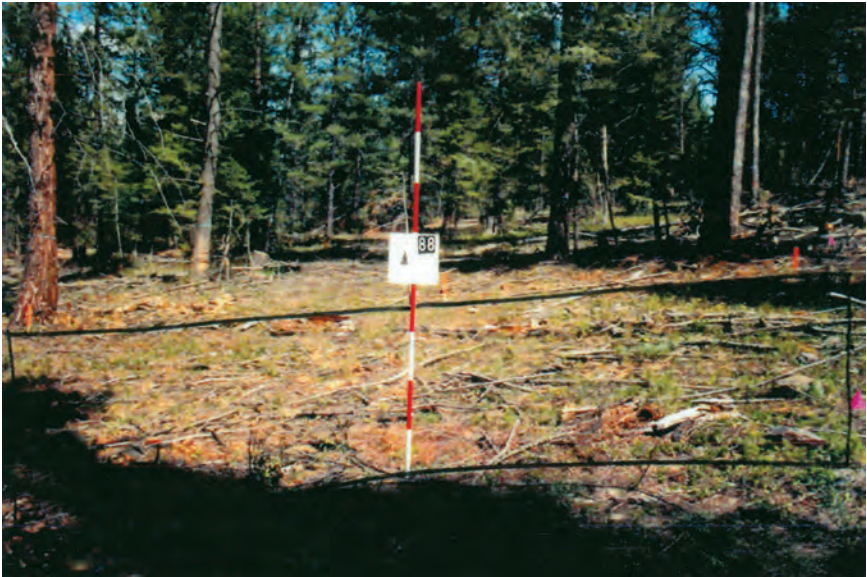


Stand Number 66

Needle Class: Short Needle

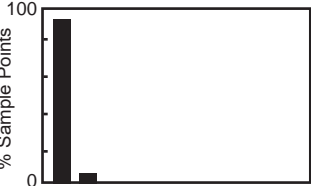
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Miller Creek, Missoula, MT	% Slope	Flame Length (ft.)
Needles	0.8	Terrain Slope (%)	35	0	1
0-0.25	0.9	Aspect	North	15	1
0.25-1.0	4.1	Yarding Method	Ground lead	30	1
1.0-3.0	2.9	Slash Treatment	Dozer piled	40	1
Subtotal 0-3	8.7	Flame Length (ft.)	1	60	1
Subtotal 3+	8.3			90	1
Total	17.0				
Slash Composition		Slash Depth Distribution (in.)		Comments: Residual slash from piling operations.	
Species	Percent				
Douglas-fir	100				





Stand Number 88

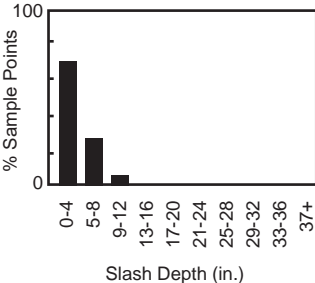
Needle Class: Short Needle

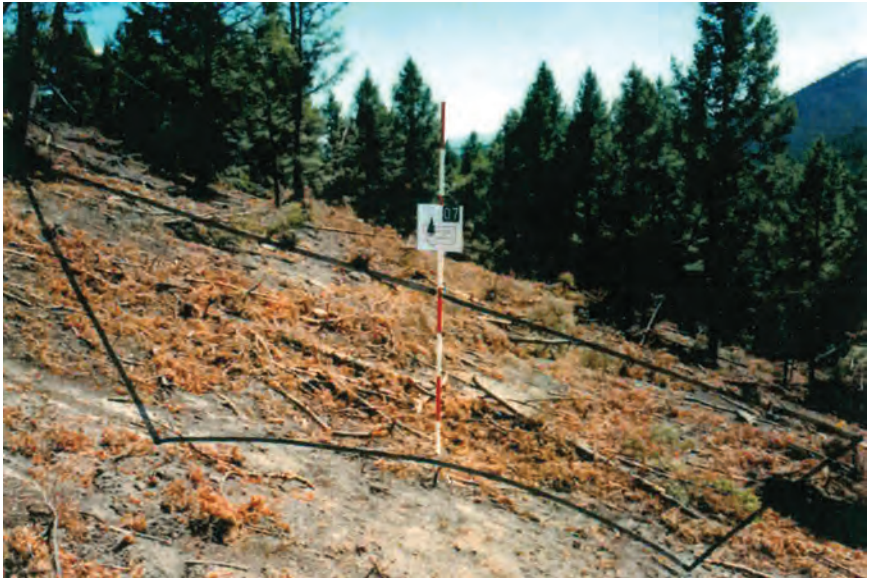
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Camas Prairie, Potomac, MT	% Slope	Flame Length (ft.)
Needles	0.0	Terrain Slope (%)	12	0	2
0-0.25	1.6	Aspect	North	15	2
0.25-1.0	2.7	Yarding Method	Ground lead	30	2
1.0-3.0	3.8	Slash Treatment	Crushed	40	2
Subtotal 0-3	8.1	Flame Length (ft.)	2	60	2
Subtotal 3+	1.4	<div>Slash Depth Distribution (in.)</div> 		90	3
Total	9.5				
Slash Composition		<div>Comments: Residual slash from cutting operations in adjacent areas.</div>			
Species	Percent				
Douglas-fir	50				
Western larch	40				
Ponderosa pine	10				



Stand Number 87

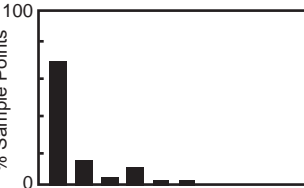
Needle Class: Short Needle

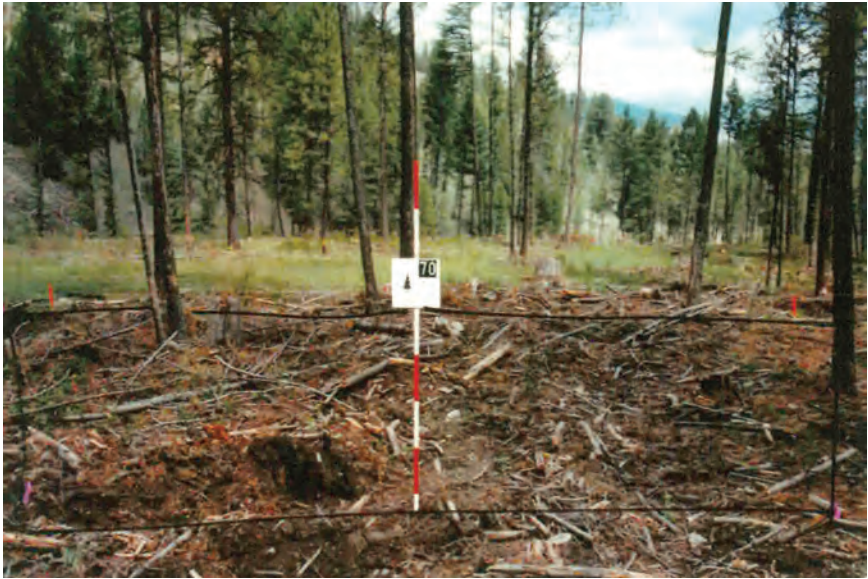
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Camas Prairie, Potomac, MT	% Slope	Flame Length (ft.)
Needles	0.0	Terrain Slope (%)	14	0	2
0-0.25	1.5	Aspect	North	15	2
0.25-1.0	3.1	Yarding Method	Ground lead	30	2
1.0-3.0	6.4	Slash Treatment	Crushed	40	2
Subtotal 0-3	11.0	Flame Length (ft.)	2	60	2
Subtotal 3+	4.3			90	3
Total	15.3				
Slash Composition		Slash Depth Distribution (in.)		Comments: Crushing and settling removed needles from slash.	
Species	Percent				
Douglas-fir	50				
Western larch	30				
Ponderosa pine	20				



Stand Number 07

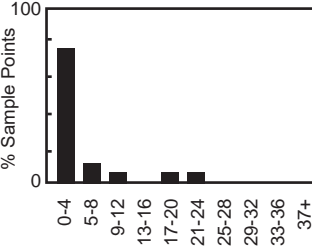
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths																							
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Telegraph Gulch, Rocker, MT	% Slope	Flame Length (ft.)																						
Needles	1.1	Terrain Slope (%)	35	0	2																						
0-0.25	1.9	Aspect	Southwest	15	2																						
0.25-1.0	4.7	Yarding Method	Tree Length Skid	30	2																						
1.0-3.0	3.7	Slash Treatment	Piled and Burned	40	2																						
Subtotal 0-3	11.4	Flame Length (ft.)	2	60	2																						
Subtotal 3+	1.0			90	3																						
Total	12.4	<div>Slash Depth Distribution (in.)</div>  <table border="1"><caption>Slash Depth Distribution Data</caption><thead><tr><th>Slash Depth (in.)</th><th>% Sample Points</th></tr></thead><tbody><tr><td>0-4</td><td>85</td></tr><tr><td>5-8</td><td>15</td></tr><tr><td>9-12</td><td>5</td></tr><tr><td>13-16</td><td>10</td></tr><tr><td>17-20</td><td>5</td></tr><tr><td>21-24</td><td>5</td></tr><tr><td>25-28</td><td>0</td></tr><tr><td>29-32</td><td>0</td></tr><tr><td>33-36</td><td>0</td></tr><tr><td>37+</td><td>0</td></tr></tbody></table>		Slash Depth (in.)	% Sample Points	0-4	85	5-8	15	9-12	5	13-16	10	17-20	5	21-24	5	25-28	0	29-32	0	33-36	0	37+	0	Comments:	
Slash Depth (in.)	% Sample Points																										
0-4	85																										
5-8	15																										
9-12	5																										
13-16	10																										
17-20	5																										
21-24	5																										
25-28	0																										
29-32	0																										
33-36	0																										
37+	0																										
Slash Composition																											
Species	Percent																										
Douglas-fir	100																										



Stand Number 70

Needle Class: Short Needle

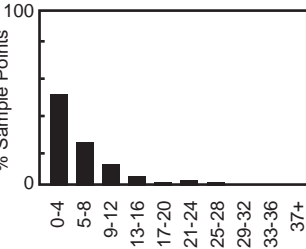
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Dry Gulch, Missoula, MT	% Slope	Flame Length (ft.)
Needles	0.0	Terrain Slope (%)	0	0	2
0-0.25	1.0	Aspect	(flat)	15	2
0.25-1.0	3.3	Yarding Method	Ground lead	30	2
1.0-3.0	4.1	Slash Treatment	Dozer piled	40	2
Subtotal 0-3	8.4	Flame Length (ft.)	2	60	3
Subtotal 3+	6.5			90	3
Total	14.9				
Slash Composition		Slash Depth Distribution (in.)		Comments: Residual slash from dozer piling. Data represents <u>only</u> the area within plot boundary.	
Species	Percent				
Douglas-fir	90				
Ponderosa pine	10				





Stand Number 93

Needle Class: Short Needle

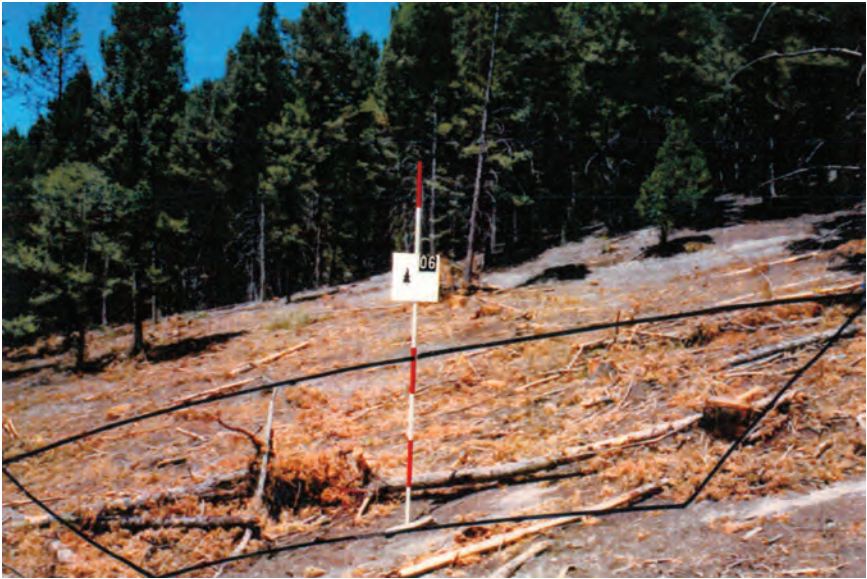
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Plains, MT	% Slope	Flame Length (ft.)
		Terrain Slope (%)	33		
Needles	0.6	Aspect	North	0	2
0-0.25	1.0	Yarding Method	Log Length	15	2
0.25-1.0	4.5	Slash Treatment	Crushed	30	2
1.0-3.0	8.7	Flame Length (ft.)	2	40	2
Subtotal 0-3	14.8			60	2
Subtotal 3+	19.5			90	3
Total	34.3				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash was crushed during dozer piling operations.	
Species	Percent				
Douglas-fir	100				



Stand Number 68

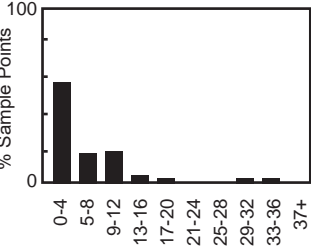
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Dry Gulch, Missoula, MT	% Slope	Flame Length (ft.)
Needles	0.0	Terrain Slope (%)	30	0	2
0-0.25	0.6	Aspect	North	15	2
0.25-1.0	2.5	Yarding Method	Ground lead	30	2
1.0-3.0	4.6	Slash Treatment	Dozer piled	40	3
Subtotal 0-3	7.7	Flame Length (ft.)	2	60	3
Subtotal 3+	4.2			90	4
Total	11.9				
Slash Composition		Slash Depth Distribution (in.) 			
Species	Percent	Comments: Slash is 3-4 years old and has dropped its needles.			
Douglas-fir	99				
Ponderosa pine	1				



Stand Number 06

Needle Class: Short Needle

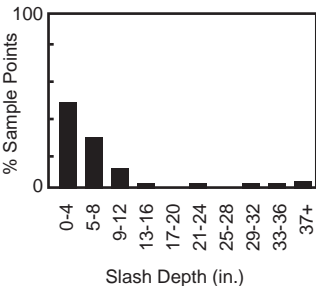
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Telegraph Gulch, Rocker, MT	% Slope	Flame Length (ft.)
Needles	1.3	Terrain Slope (%)	28	0	2
0-0.25	2.6	Aspect	Southwest	15	2
0.25-1.0	5.3	Yarding Method	Tree Lenght Skid	30	2
1.0-3.0	5.0	Slash Treatment	None	40	3
Subtotal 0-3	14.2	Flame Length (ft.)	2	60	3
Subtotal 3+	5.0			90	4
Total	19.2				
Slash Composition		Slash Depth Distribution (in.)		Comments:	
Species	Percent				
Douglas-fir	100				



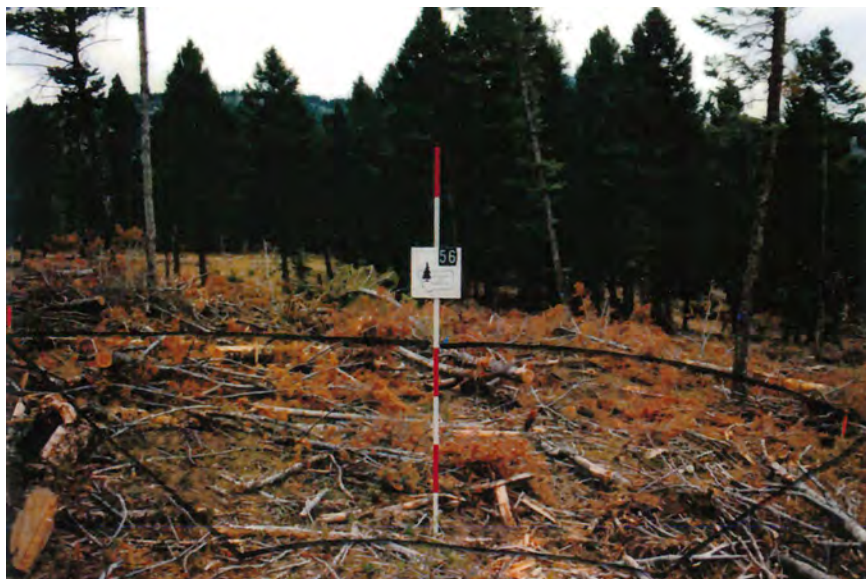


Stand Number 67

Needle Class: Short Needle

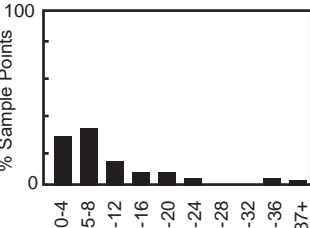
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Miller Creek, Missoula, MT	% Slope	Flame Length (ft.)
Needles	0.9	Terrain Slope (%)	10		
0-0.25	0.9	Aspect	South	0	3
0.25-1.0	4.6	Yarding Method	Ground lead	15	3
1.0-3.0	9.8	Slash Treatment	None	30	3
Subtotal 0-3	16.2	Flame Length (ft.)	3	40	3
Subtotal 3+	10.4			60	4
Total	26.6			90	4
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash consists of clumps and scattered tops.	
Species	Percent				
Douglas-fir	99				
Ponderosa pine	1				





Stand Number 56

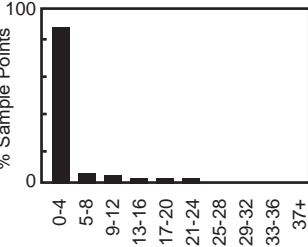
Needle Class: Short Needle

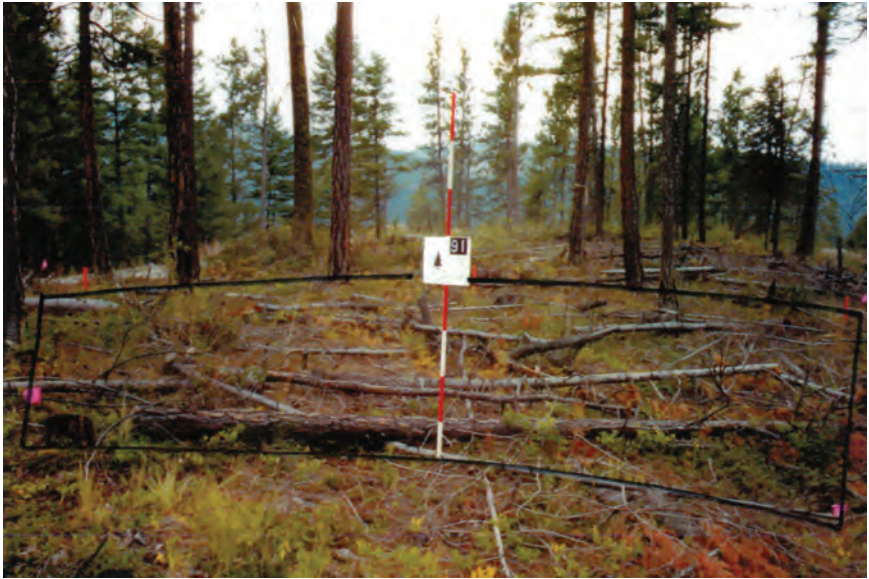
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Flathead Pass, Bozeman, MT	% Slope	Flame Length (ft.)
Needles	1.4	Terrain Slope (%)	22	0	3
0-0.25	1.7	Aspect	South	15	3
0.25-1.0	7.0	Yarding Method	Ground lead	30	3
1.0-3.0	12.3	Slash Treatment	Dozer Crushed	40	3
Subtotal 0-3	22.4	Flame Length (ft.)	3	60	4
Subtotal 3+	15.7			90	4
Total	38.1				
Slash Composition		Slash Depth Distribution (in.)		Comments: Crushing reduced slash depths; this reduced flame length such that 4' standard was met. Data represents area <u>only</u> within plot boundary.	
Species	Percent				
Douglas-fir	100				



Stand Number 77

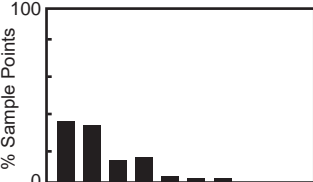
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Albert Creek, Missoula, MT	% Slope	Flame Length (ft.)
Needles	0.7	Terrain Slope (%)	0	0	3
0-0.25	0.3	Aspect	(flat)	15	3
0.25-1.0	2.0	Yarding Method	Ground lead	30	3
1.0-3.0	3.8	Slash Treatment	Lopped	40	3
Subtotal 0-3	6.8	Flame Length (ft.)	3	60	4
Subtotal 3+	5.8			90	4
Total	12.6				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash consists of clump and scattered tops. Data represents <u>only</u> area within plot boundary.	
Species	Percent				
Douglas-fir	100				



Stand Number 91

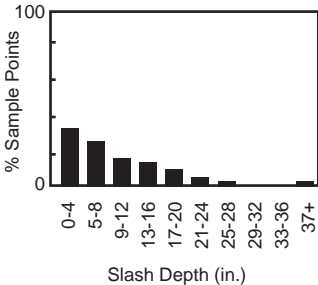
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths			
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Plains, MT	% Slope	Flame Length (ft.)		
		Terrain Slope (%)	0				
Needles	0.4	Aspect	(ridgetop)	0	3		
0-0.25	0.8	Yarding Method	Ground lead	15	4		
0.25-1.0	2.4	Slash Treatment	Lopped	30	4		
1.0-3.0	3.5	Flame Length (ft.)	3	40	4		
Subtotal 0-3	7.1			60	4		
Subtotal 3+	6.1			90	5		
Total	13.2						
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash is approx. three years old and has lost most of its needles.			
Species	Percent						
Douglas-fir	95						
Ponderosa pine	5						
		Slash Depth (in.)					

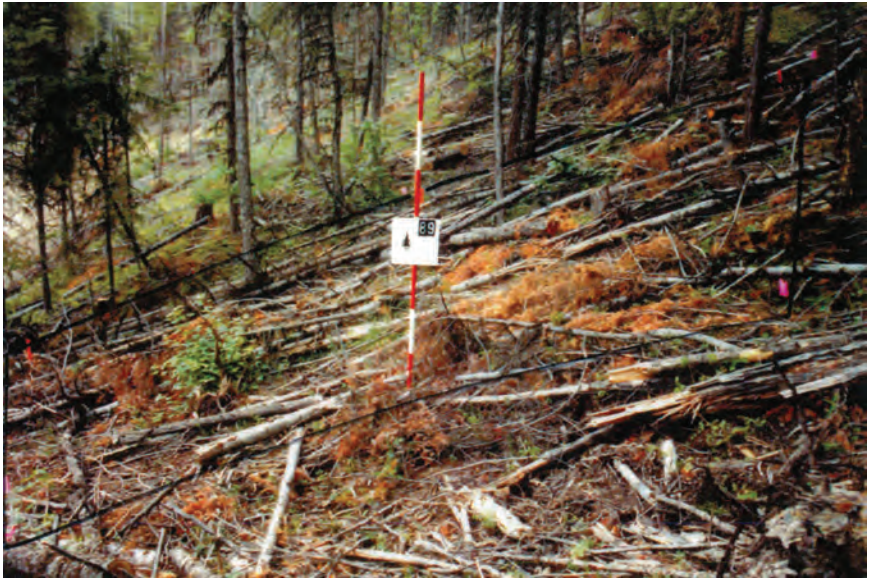


Stand Number 16

Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Plains, MT	% Slope	Flame Length (ft.)
		Terrain Slope (%)	40		
Needles	1.7	Aspect	North	0	4
0-0.25	2.1	Yarding Method	Ground lead	15	4
0.25-1.0	4.7	Slash Treatment	None	30	4
1.0-3.0	6.1	Flame Length (ft.)	5	40	5
Subtotal 0-3	14.6			60	5
Subtotal 3+	24.1			90	6
Total	38.7				
Slash Composition		Slash Depth Distribution (in.)		Comments: Lopping to 24" reduces slash depth; this decreases flame length 1'.	
Species	Percent				
Douglas-fir	70				
Ponderosa pine	30				





Stand Number 89

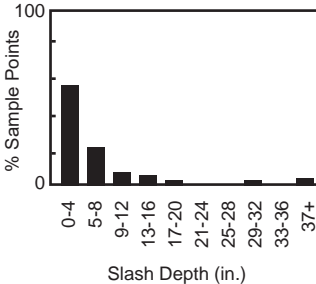
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths																							
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Loman Pass, Plains, MT	% Slope	Flame Length (ft.)																						
Needles	1.2	Terrain Slope (%)	44	0	4																						
0-0.25	1.7	Aspect	East	15	4																						
0.25-1.0	4.8	Yarding Method	Ground lead	30	5																						
1.0-3.0	7.9	Slash Treatment	None	40	5																						
Subtotal 0-3	15.6	Flame Length (ft.)	4	60	5																						
Subtotal 3+	15.4			90	6																						
Total	31.0																										
Slash Composition		<div>Slash Depth Distribution (in.)</div> <table><thead><tr><th>Slash Depth (in.)</th><th>% Sample Points</th></tr></thead><tbody><tr><td>0-4</td><td>25</td></tr><tr><td>5-8</td><td>22</td></tr><tr><td>9-12</td><td>15</td></tr><tr><td>13-16</td><td>5</td></tr><tr><td>17-20</td><td>4</td></tr><tr><td>21-24</td><td>4</td></tr><tr><td>25-28</td><td>2</td></tr><tr><td>29-32</td><td>1</td></tr><tr><td>33-36</td><td>1</td></tr><tr><td>37+</td><td>1</td></tr></tbody></table>		Slash Depth (in.)	% Sample Points	0-4	25	5-8	22	9-12	15	13-16	5	17-20	4	21-24	4	25-28	2	29-32	1	33-36	1	37+	1	Comments: Slash has aged two years.	
Slash Depth (in.)	% Sample Points																										
0-4	25																										
5-8	22																										
9-12	15																										
13-16	5																										
17-20	4																										
21-24	4																										
25-28	2																										
29-32	1																										
33-36	1																										
37+	1																										
Species	Percent																										
Grand fir	80																										
Lodgepole pine	20																										



Stand Number 10

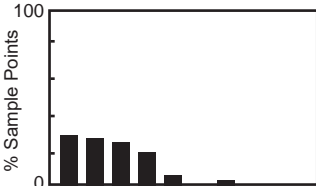
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Ovando, MT	% Slope	Flame Length (ft.)
Needles	1.6	Terrain Slope (%)	17		
0-0.25	5.4	Aspect	Southeast	0	4
0.25-1.0	4.3	Yarding Method	Ground lead	15	4
1.0-3.0	6.5	Slash Treatment	None	30	4
Subtotal 0-3	17.8	Flame Length (ft.)	4	40	5
Subtotal 3+	16.6			60	5
Total	34.4			90	6
Slash Composition		Slash Depth Distribution (in.)		Comments: Lopping to 24" reduces slash depth; this decreases flame length1'.	
Species	Percent				
Douglas-fir	100				



Stand Number 90

Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Buffalo Bill, Plains, MT	% Slope	Flame Length (ft.)
Needles	2.5	Terrain Slope (%)	25	0	4
0-0.25	1.6	Aspect	Southwest	15	4
0.25-1.0	9.2	Yarding Method	Log length	30	4
1.0-3.0	5.0	Slash Treatment	Lopped	40	5
Subtotal 0-3	18.3	Flame Length (ft.)	4	60	5
Subtotal 3+	9.3	<div>Slash Depth Distribution (in.)</div> 		90	6
Total	27.6				
Slash Composition		<div>Comments:</div>			
Species	Percent				
Douglas-fir	60				
Lodgepole pine	20				
Grand fir	20				





Stand Number 09

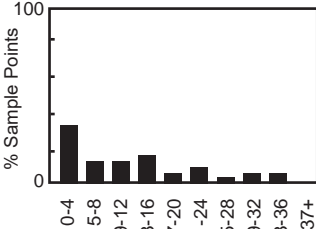
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths																							
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Ovando, MT	% Slope	Flame Length (ft.)																						
Needles	1.4	Terrain Slope (%)	16																								
0-0.25	1.7	Aspect	Southeast	0	4																						
0.25-1.0	6.9	Yarding Method	Ground lead	15	4																						
1.0-3.0	5.7	Slash Treatment	None	30	5																						
Subtotal 0-3	15.7	Flame Length (ft.)	4	40	5																						
Subtotal 3+	23.5			60	6																						
Total	39.2			90	7																						
Slash Composition		<div>Slash Depth Distribution (in.)</div> <table border="1"><caption>Slash Depth Distribution Data</caption><thead><tr><th>Slash Depth (in.)</th><th>% Sample Points</th></tr></thead><tbody><tr><td>0-4</td><td>65</td></tr><tr><td>5-8</td><td>10</td></tr><tr><td>9-12</td><td>5</td></tr><tr><td>13-16</td><td>10</td></tr><tr><td>17-20</td><td>2</td></tr><tr><td>21-24</td><td>0</td></tr><tr><td>25-28</td><td>0</td></tr><tr><td>29-32</td><td>2</td></tr><tr><td>33-36</td><td>2</td></tr><tr><td>37+</td><td>2</td></tr></tbody></table>				Slash Depth (in.)	% Sample Points	0-4	65	5-8	10	9-12	5	13-16	10	17-20	2	21-24	0	25-28	0	29-32	2	33-36	2	37+	2
Slash Depth (in.)	% Sample Points																										
0-4	65																										
5-8	10																										
9-12	5																										
13-16	10																										
17-20	2																										
21-24	0																										
25-28	0																										
29-32	2																										
33-36	2																										
37+	2																										
Species	Percent																										
Douglas-fir	90																										
Lodgepole pine	10																										
		Comments: Lopping to 24" reduces slash depth; this decreases flame length 1'.																									



Stand Number 92

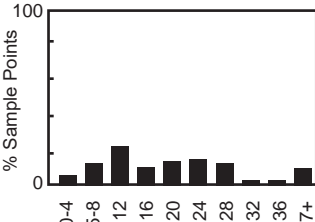
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Plains, MT	% Slope	Flame Length (ft.)
		Terrain Slope (%)	40		
Needles	1.9	Aspect	East	0	4
0-0.25	0.9	Yarding Method	Ground lead	15	4
0.25-1.0	6.7	Slash Treatment	None	30	4
1.0-3.0	4.3	Flame Length (ft.)	5	40	5
Subtotal 0-3	13.8			60	5
Subtotal 3+	16.9			90	6
Total	30.7				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash is 3-4 years old and has lost most of its needles.	
Species	Percent				
Douglas-fir	75				
Western larch	20				
Ponderosa pine	5				

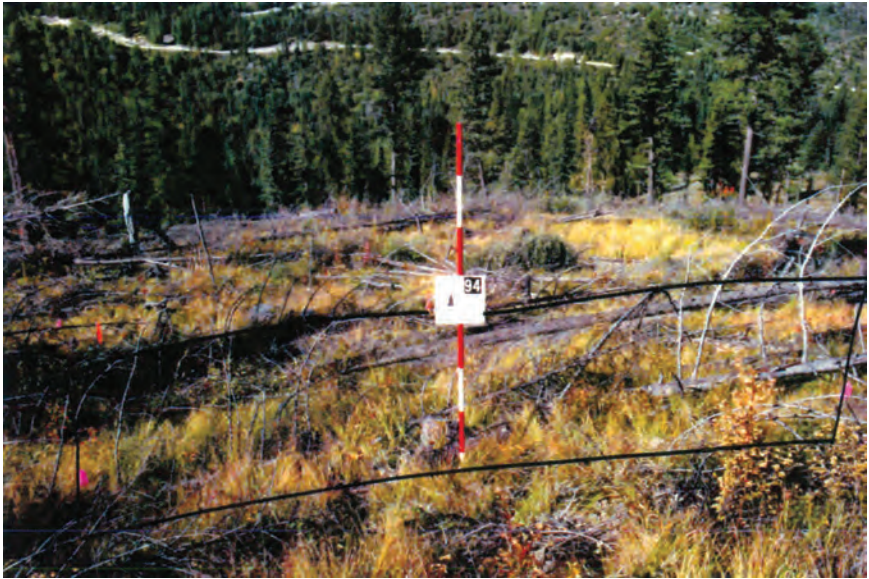


Stand Number 26

Needle Class: Short Needle

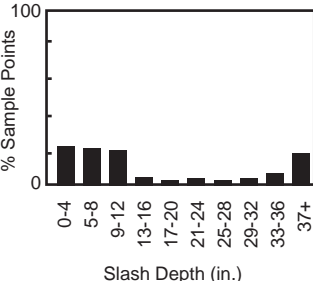
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths			
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Kalispell, MT	% Slope	Flame Length (ft.)		
		Terrain Slope (%)	10				
Needles	1.5	Aspect	Southeast	0	5		
0-0.25	2.8	Yarding Method	Ground lead	15	5		
0.25-1.0	7.9	Slash Treatment	None	30	5		
1.0-3.0	9.2	Flame Length (ft.)	5	40	5		
Subtotal 0-3	21.4			60	6		
Subtotal 3+	48.6			90	7		
Total	70.0						
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depth; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.			
Species	Percent						
Grand fir	70						
Western larch	20						
Douglas-fir	10						

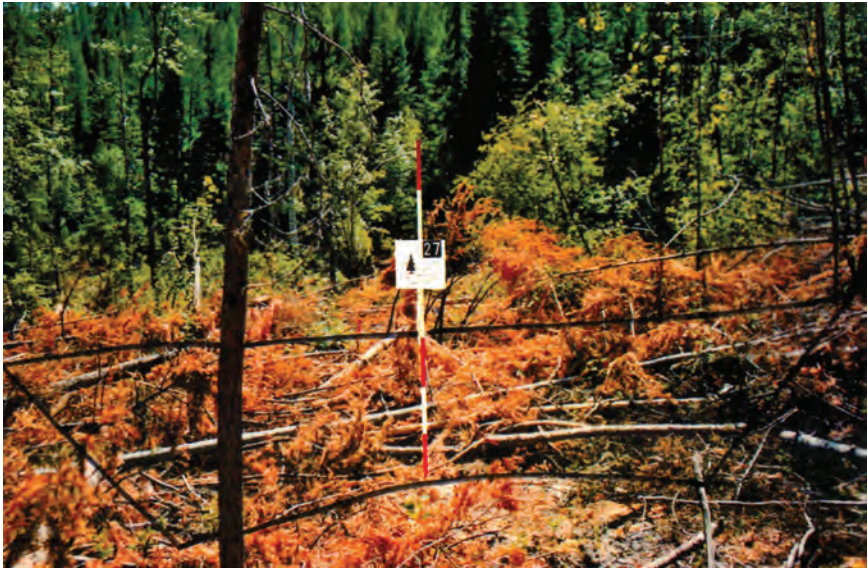




Stand Number 94

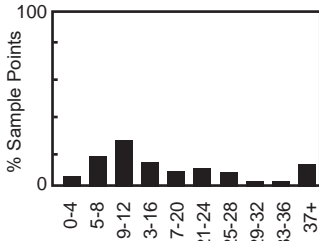
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	People Creek, Libby, MT	% Slope	Flame Length (ft.)
Needles	0.0	Terrain Slope (%)	33	0	5
0-0.25	0.9	Aspect	Nort	15	5
0.25-1.0	11.4	Yarding Method	Ground lead	30	5
1.0-3.0	3.9	Slash Treatment	None	40	6
Subtotal 0-3	16.2	Flame Length (ft.)	5	60	6
Subtotal 3+	33.8			90	6
Total	50.0				
Slash Composition		<div>Slash Depth Distribution (in.)</div> 		Comments: Slash is approx. five years old and has lost all needles.	
Species	Percent				
Douglas-fir	100				



Stand Number 27

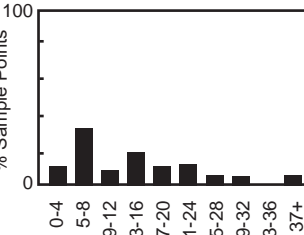
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Kalispell, MT	% Slope	Flame Length (ft.)
Needles	1.6	Terrain Slope (%)	15		
0-0.25	3.2	Aspect	Southeast	0	5
0.25-1.0	7.9	Yarding Method	Ground lead	15	5
1.0-3.0	7.8	Slash Treatment	None	30	5
Subtotal 0-3	20.5	Flame Length (ft.)	5	40	6
Subtotal 3+	12.2			60	7
Total	32.7			90	8
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depth; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.	
Species	Percent				
Grand fir	80				
Western larch	20				

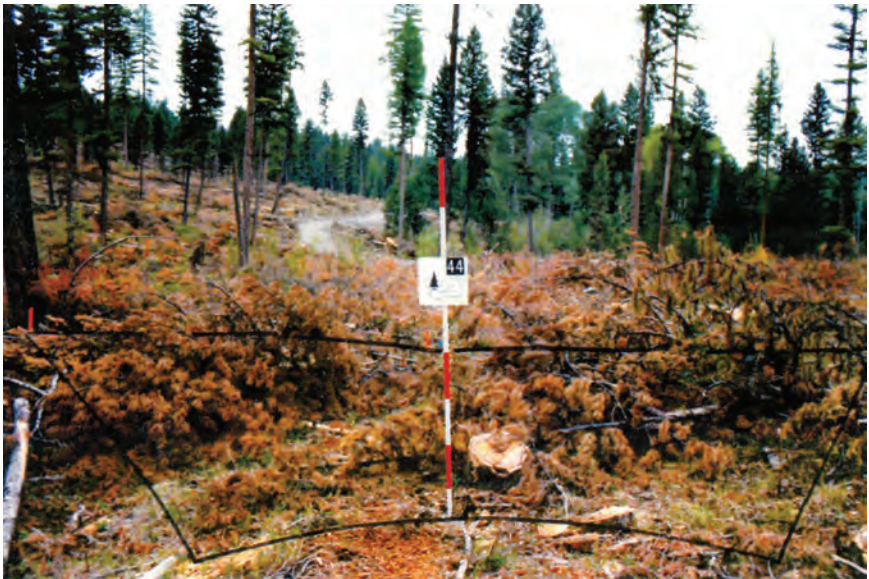


Stand Number 03

Needle Class: Short Needle

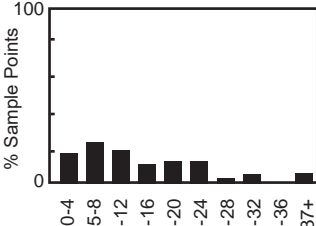
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths			
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Miller Creek, Missoula, MT	% Slope	Flame Length (ft.)		
Needles	3.9	Terrain Slope (%)	44	0	5		
0-0.25	16.7	Aspect	Southeast	15	5		
0.25-1.0	7.2	Yarding Method	Cable	30	5		
1.0-3.0	10.7	Slash Treatment	Lopped	40	6		
Subtotal 0-3	38.5	Flame Length (ft.)	6	60	7		
Subtotal 3+	30.0			90	8		
Total	68.5	<div>Slash Depth Distribution (in.)</div> 		Comments: Heavy mistletoe caused increased fuel loading.			
Slash Composition							
Species	Percent						
Douglas-fir	100						





Stand Number 44

Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Placid Lake, MT	% Slope	Flame Length (ft.)
Needles	1.2	Terrain Slope (%)	2		
0-0.25	2.4	Aspect	Flat	0	5
0.25-1.0	3.9	Yarding Method	Cable	15	5
1.0-3.0	8.9	Slash Treatment	None	30	6
Subtotal 0-3	16.4	Flame Length (ft.)	5	40	6
Subtotal 3+	6.5			60	7
Total	22.9			90	8
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.	
Species	Percent				
Douglas-fir	60				
Lodgepole pine	40				





Stand Number 13

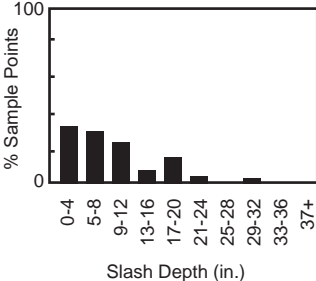
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Plains, MT	% Slope	Flame Length (ft.)
		Terrain Slope (%)	45		
Needles	2.4	Aspect	North	0	5
0-0.25	6.0	Yarding Method	Ground lead	15	5
0.25-1.0	6.9	Slash Treatment	None	30	6
1.0-3.0	12.8	Flame Length (ft.)	6	40	6
Subtotal 0-3	28.1			60	7
Subtotal 3+	34.4			90	8
Total	62.5				
Slash Composition		Slash Depth Distribution (in.)		Comments: 0-3" fuel loadings contributed to high flame length rating. Note skid trail in plot.	
Species	Percent				
Grand fir	60				
Western red cedar	40				



Stand Number 04

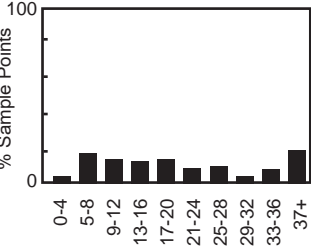
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Miller Creek, Missoula, MT	% Slope	Flame Length (ft.)
Needles	2.5	Terrain Slope (%)	28	0	5
0-0.25	8.7	Aspect	Southeast	15	6
0.25-1.0	6.3	Yarding Method	Cable	30	6
1.0-3.0	8.0	Slash Treatment	Lopped	40	6
Subtotal 0-3	25.5	Flame Length (ft.)	6	60	7
Subtotal 3+	19.6			90	9
Total	45.1				
Slash Composition		Slash Depth Distribution (in.)		Comments: 0-3" dia. Fuel loading contributed to high flame length.	
Species	Percent				
Douglas-fir	100				

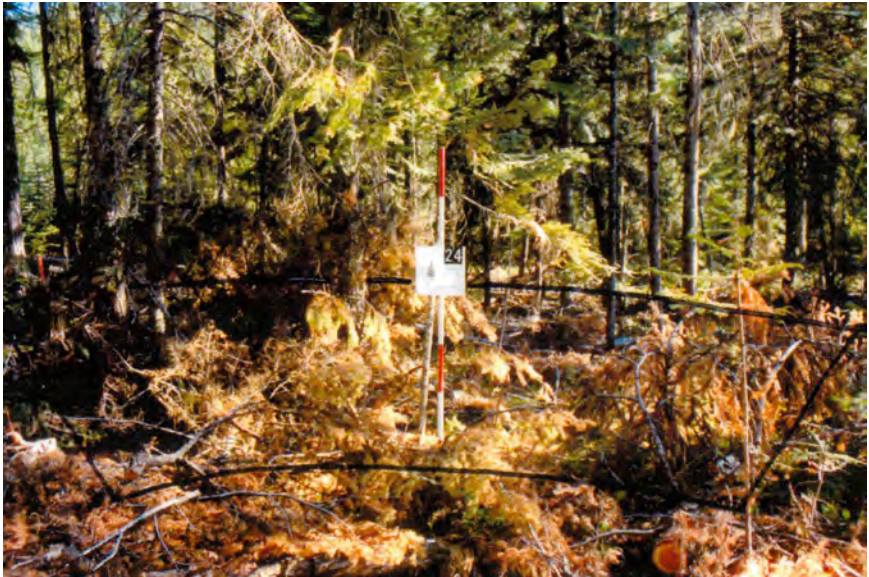


Stand Number 43

Needle Class: Short Needle

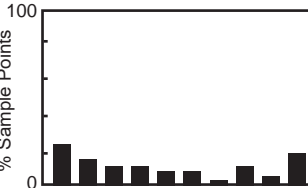
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Placid Lake, MT	% Slope	Flame Length (ft.)
Needles	2.4	Terrain Slope (%)	18		
0-0.25	3.0	Aspect	West	0	6
0.25-1.0	6.6	Yarding Method	Ground lead	15	6
1.0-3.0	9.7	Slash Treatment	None	30	6
Subtotal 0-3	21.7	Flame Length (ft.)	6	40	7
Subtotal 3+	18.3			60	8
Total	40.0			90	9
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depth; this decreases flame length 1'.	
Species	Percent				
Douglas-fir	70				
Ponderosa pine	30				

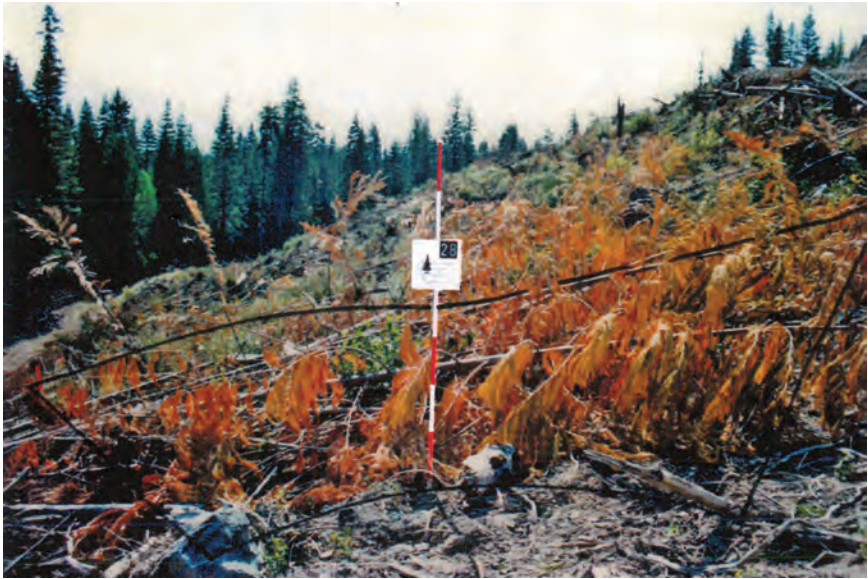




Stand Number 24

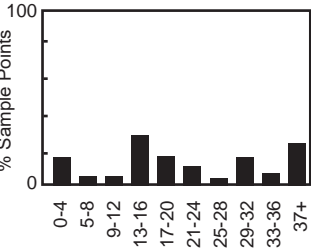
Needle Class: Short Needle

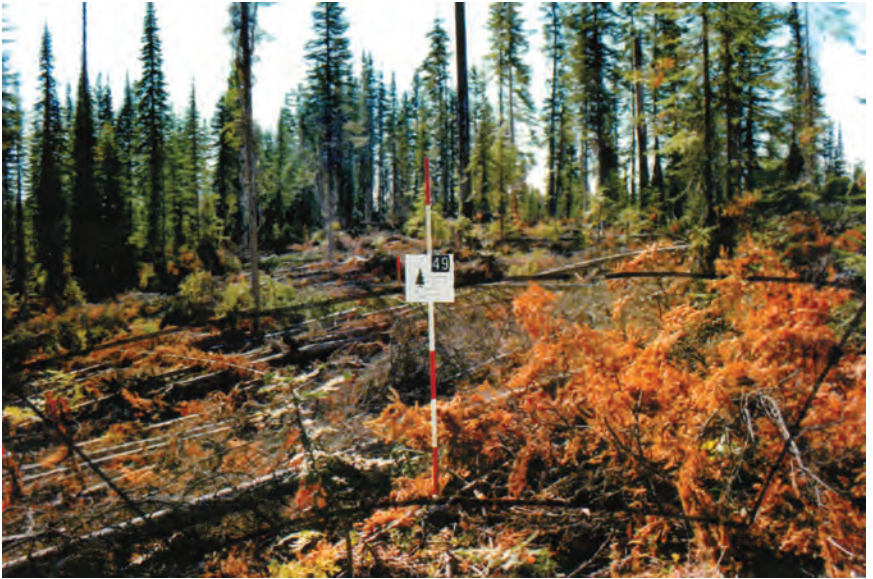
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths			
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Libby, MT	% Slope	Flame Length (ft.)		
		Terrain Slope (%)	4				
Needles	1.9	Aspect	Flat	0	6		
0-0.25	6.2	Yarding Method	Cable	15	6		
0.25-1.0	4.8	Slash Treatment	None	30	7		
1.0-3.0	6.7	Flame Length (ft.)	6	40	7		
Subtotal 0-3	19.6			60	8		
Subtotal 3+	30.4			90	10		
Total	50.0						
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depth; this decreases flame length rating 1'. Lopping to 18" decreases flame length an additional 1'.			
Species	Percent						
Hemlock	40						
Douglas-fir	30						
Grand fir	30						



Stand Number 28

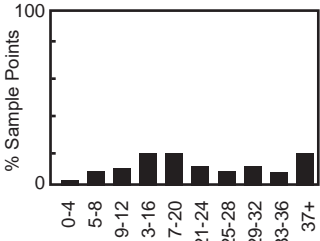
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Bigfork, MT	% Slope	Flame Length (ft.)
Needles	4.0	Terrain Slope (%)	35		
0-0.25	1.1	Aspect	Northeast	0	6
0.25-1.0	4.6	Yarding Method	Ground lead	15	7
1.0-3.0	8.1	Slash Treatment	None	30	7
Subtotal 0-3	17.8	Flame Length (ft.)	7	40	7
Subtotal 3+	35.3			60	8
Total	53.1			90	10
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loading contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.	
Species	Percent				
Western red cedar	80				
Grand fir	20				



Stand Number 49

Needle Class: Short Needle

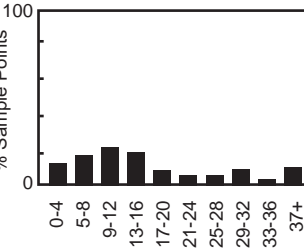
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths			
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Olney, MT	% Slope	Flame Length (ft.)		
		Terrain Slope (%)	25				
Needles	3.1	Aspect	East	0	7		
0-0.25	4.1	Yarding Method	Ground lead	15	7		
0.25-1.0	12.9	Slash Treatment	None	30	7		
1.0-3.0	8.1	Flame Length (ft.)	7	40	7		
Subtotal 0-3	28.2			60	9		
Subtotal 3+	25.9			90	10		
Total	54.1						
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 2'.			
Species	Percent						
Grand fir	50						
Hemlock	50						



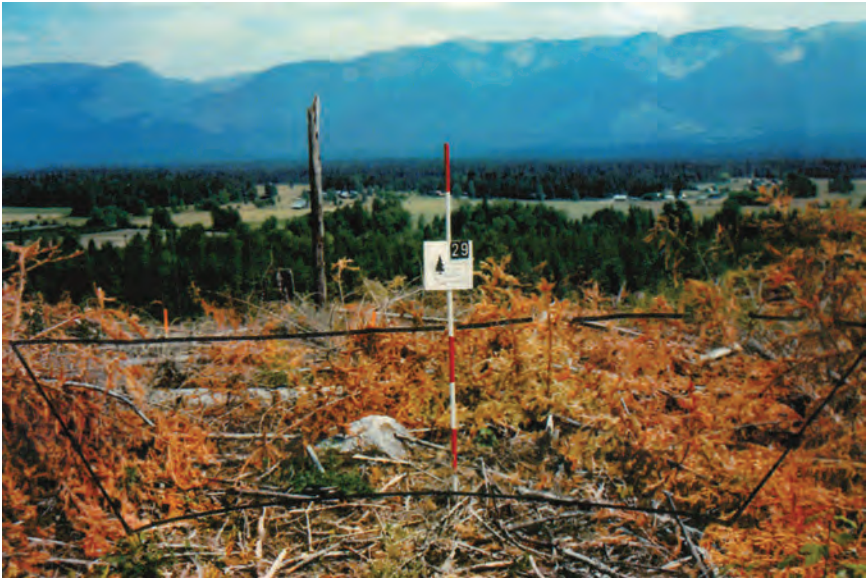


Stand Number 22

Needle Class: Short Needle

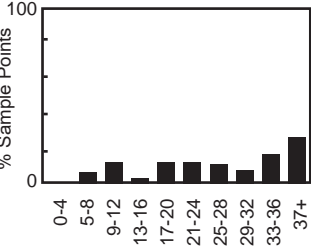
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Libby, MT	% Slope	Flame Length (ft.)
Needles	2.9	Terrain Slope (%)	10		
0-0.25	9.1	Aspect	Southeast	0	7
0.25-1.0	6.4	Yarding Method	Ground lead	15	7
1.0-3.0	8.6	Slash Treatment	None	30	8
Subtotal 0-3	27.0	Flame Length (ft.)	7	40	8
Subtotal 3+	19.7			60	9
Total	46.7			90	11
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 2'.	
Species	Percent				





Stand Number 29

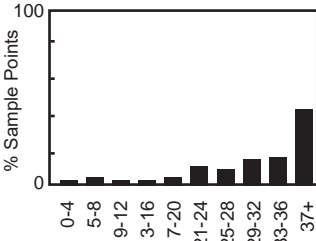
Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Bigfork, MT	% Slope	Flame Length (ft.)
Needles	2.4	Terrain Slope (%)	15		
0-0.25	3.3	Aspect	East	0	7
0.25-1.0	8.5	Yarding Method	Ground lead	15	7
1.0-3.0	13.5	Slash Treatment	None	30	8
Subtotal 0-3	27.7	Flame Length (ft.)	7	40	8
Subtotal 3+	27.8			60	9
Total	55.5			90	11
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 2'.	
Species	Percent				



Stand Number 48

Needle Class: Short Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Olney, MT	% Slope	Flame Length (ft.)
		Terrain Slope (%)	15		
Needles	4.7	Aspect	East	0	8
0-0.25	8.5	Yarding Method	Ground lead	15	8
0.25-1.0	14.6	Slash Treatment	None	30	8
1.0-3.0	9.6	Flame Length (ft.)	8	40	9
Subtotal 0-3	37.4			60	10
Subtotal 3+	60.1			90	13
Total	97.5				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loading contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 2'.	
Species	Percent				
Hemlock	40				
Douglas-fir	30				
Grand fir	30				

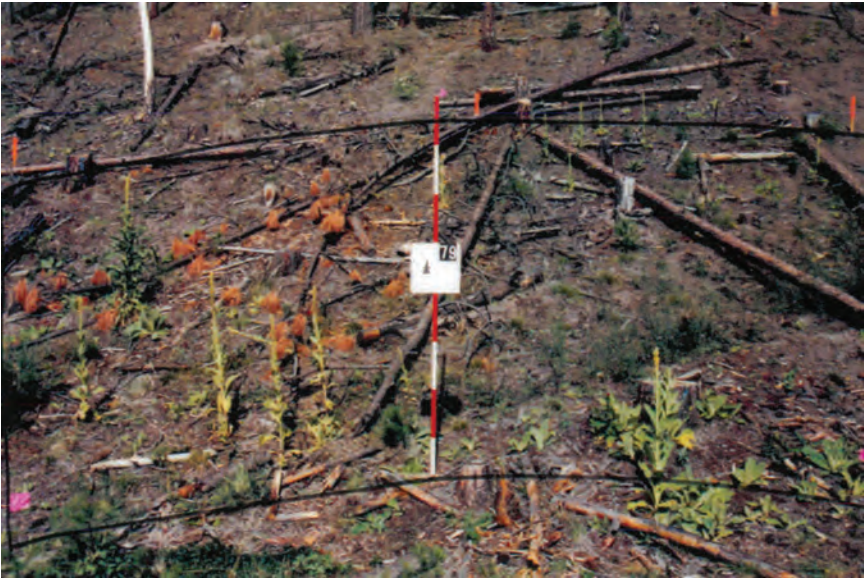




## Long-Needled Series

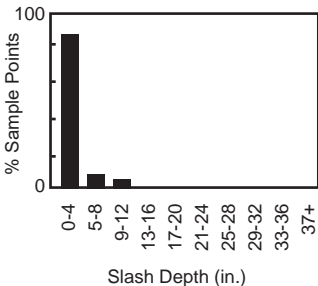




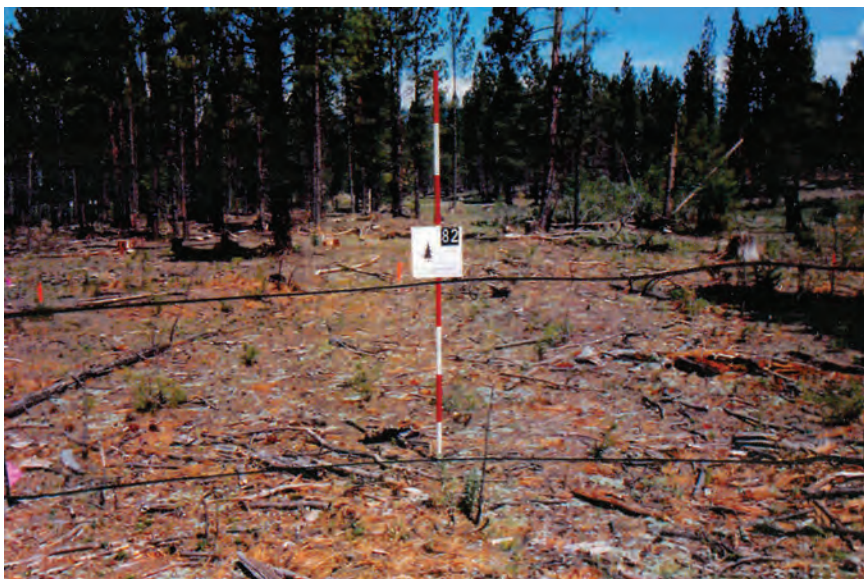


Stand Number 79

Needle Class: Long Needle

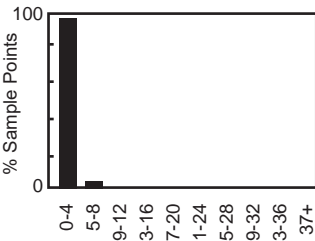
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Rock Creek, Missoula, MT	% Slope	Flame Length (ft.)
Needles	0.0	Terrain Slope (%)	53	0	1
0-0.25	0.1	Aspect	Southeast	15	1
0.25-1.0	2.0	Yarding Method	Ground lead	30	1
1.0-3.0	2.0	Slash Treatment	Lopped	40	1
Subtotal 0-3	4.1	Flame Length (ft.)	1	60	1
Subtotal 3+	11.8	<div>Slash Depth Distribution (in.)</div> 		90	1
Total	15.9			<div>Comments:</div>	
Slash Composition					
Species	Percent				
Ponderosa pine	100				



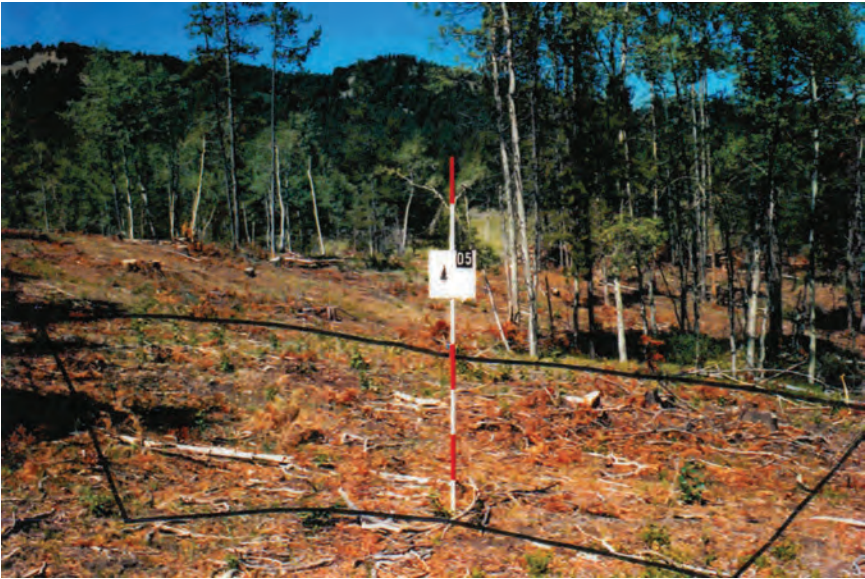


Stand Number 82

Needle Class: Long Needle

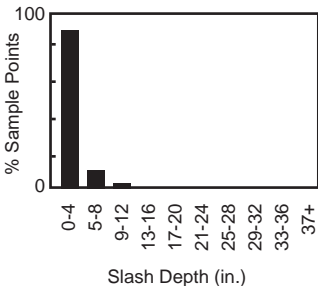
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Camas Prairie, Potomac, MT	% Slope	Flame Length (ft.)
Needles	0.0	Terrain Slope (%)	0	0	1
0-0.25	0.2	Aspect	(flat)	15	1
0.25-1.0	2.8	Yarding Method	Ground lead	30	1
1.0-3.0	1.8	Slash Treatment	Crushed	40	1
Subtotal 0-3	4.8	Flame Length (ft.)	1	60	1
Subtotal 3+	2.5			90	2
Total	7.3				
Slash Composition		Slash Depth Distribution (in.)		Comments:	
Species	Percent				
Ponderosa pine	99				
Douglas-fir	1				





Stand Number 05

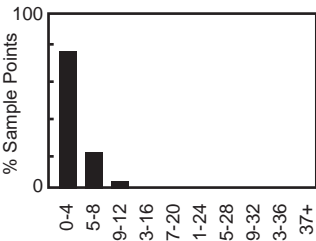
Needle Class: Long Needle

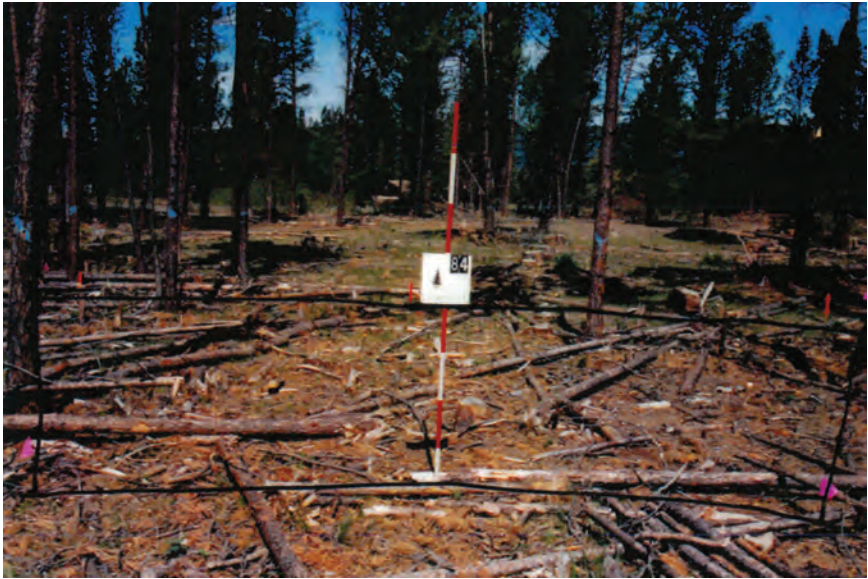
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Meadow Gulch, Rocker, MT	% Slope	Flame Length (ft.)
Needles	0.8	Terrain Slope (%)	19	0	1
0-0.25	2.6	Aspect	North	15	1
0.25-1.0	2.5	Yarding Method	Tree length skid	30	1
1.0-3.0	2.8	Slash Treatment	Landing piles burned	40	1
Subtotal 0-3	8.7	Flame Length (ft.)	1	60	2
Subtotal 3+	0.3	<b>Slash Depth Distribution (in.)</b> 		90	2
Total	9.0			Comments:	
Slash Composition					
Species	Percent				
Lodgepole pine	100				
pine					



Stand Number 80

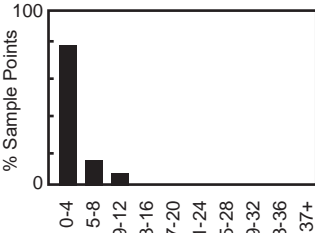
Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Camas Prairie, Potomac, MT	% Slope	Flame Length (ft.)
Needles	0.0	Terrain Slope (%)	0	0	1
0-0.25	0.5	Aspect	(flat)	15	2
0.25-1.0	6.0	Yarding Method	Ground lead	30	2
1.0-3.0	7.4	Slash Treatment	Crushed	40	2
Subtotal 0-3	13.9	Flame Length (ft.)	1	60	2
Subtotal 3+	6.6			90	2
Total	20.5				
Slash Composition		Slash Depth Distribution (in.)		Comments: 0-3" Fuel loading and reduced slash depth from crushing contributed to low flame length rating.	
Species	Percent				
Ponderosa pine	99				
Douglas-fir	1				



Stand Number 84

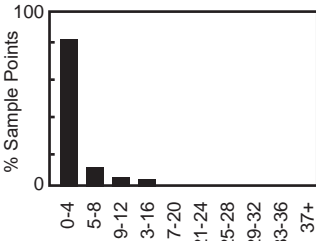
Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths																							
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Camas Prairie, Potomac, MT	% Slope	Flame Length (ft.)																						
Needles	0.0	Terrain Slope (%)	5	0	2																						
0-0.25	1.5	Aspect	Northwest	15	2																						
0.25-1.0	3.1	Yarding Method	Ground lead	30	2																						
1.0-3.0	6.4	Slash Treatment	Crushed	40	2																						
Subtotal 0-3	11.0	Flame Length (ft.)	2	60	2																						
Subtotal 3+	4.3			90	2																						
Total	15.3																										
Slash Composition		<div>Slash Depth Distribution (in.)</div>  <table><thead><tr><th>Slash Depth (in.)</th><th>% Sample Points</th></tr></thead><tbody><tr><td>0-4</td><td>85</td></tr><tr><td>5-8</td><td>10</td></tr><tr><td>9-12</td><td>5</td></tr><tr><td>13-16</td><td>0</td></tr><tr><td>17-20</td><td>0</td></tr><tr><td>21-24</td><td>0</td></tr><tr><td>25-28</td><td>0</td></tr><tr><td>29-32</td><td>0</td></tr><tr><td>33-36</td><td>0</td></tr><tr><td>37+</td><td>0</td></tr></tbody></table>		Slash Depth (in.)	% Sample Points	0-4	85	5-8	10	9-12	5	13-16	0	17-20	0	21-24	0	25-28	0	29-32	0	33-36	0	37+	0	Comments: Crushing has removed needles from slash and reduced depth such that the 4' flame length standard is met.	
Slash Depth (in.)	% Sample Points																										
0-4	85																										
5-8	10																										
9-12	5																										
13-16	0																										
17-20	0																										
21-24	0																										
25-28	0																										
29-32	0																										
33-36	0																										
37+	0																										
Species	Percent																										
Ponderosa pine	99																										
Douglas-fir	1																										



Stand Number 74

Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths																							
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Sherman Gulch, Missoula, MT	% Slope	Flame Length (ft.)																						
Needles	1.0	Terrain Slope (%)	40	0	3																						
0-0.25	1.0	Aspect	South	15	3																						
0.25-1.0	2.9	Yarding Method	Ground lead	30	3																						
1.0-3.0	4.0	Slash Treatment	Dozer piled	40	3																						
Subtotal 0-3	8.9	Flame Length (ft.)	3	60	3																						
Subtotal 3+	13.0			90	4																						
Total	21.9																										
Slash Composition		<div>Slash Depth Distribution (in.)</div>  <table><thead><tr><th>Slash Depth (in.)</th><th>% Sample Points</th></tr></thead><tbody><tr><td>0-4</td><td>85</td></tr><tr><td>5-8</td><td>5</td></tr><tr><td>9-12</td><td>2</td></tr><tr><td>13-16</td><td>1</td></tr><tr><td>17-20</td><td>0</td></tr><tr><td>21-24</td><td>0</td></tr><tr><td>25-28</td><td>0</td></tr><tr><td>29-32</td><td>0</td></tr><tr><td>33-36</td><td>0</td></tr><tr><td>37+</td><td>0</td></tr></tbody></table>		Slash Depth (in.)	% Sample Points	0-4	85	5-8	5	9-12	2	13-16	1	17-20	0	21-24	0	25-28	0	29-32	0	33-36	0	37+	0	Comments: Residual slash was crushed during piling.	
Slash Depth (in.)	% Sample Points																										
0-4	85																										
5-8	5																										
9-12	2																										
13-16	1																										
17-20	0																										
21-24	0																										
25-28	0																										
29-32	0																										
33-36	0																										
37+	0																										
Species	Percent																										
Ponderosa pine	95																										
Douglas-fir	5																										



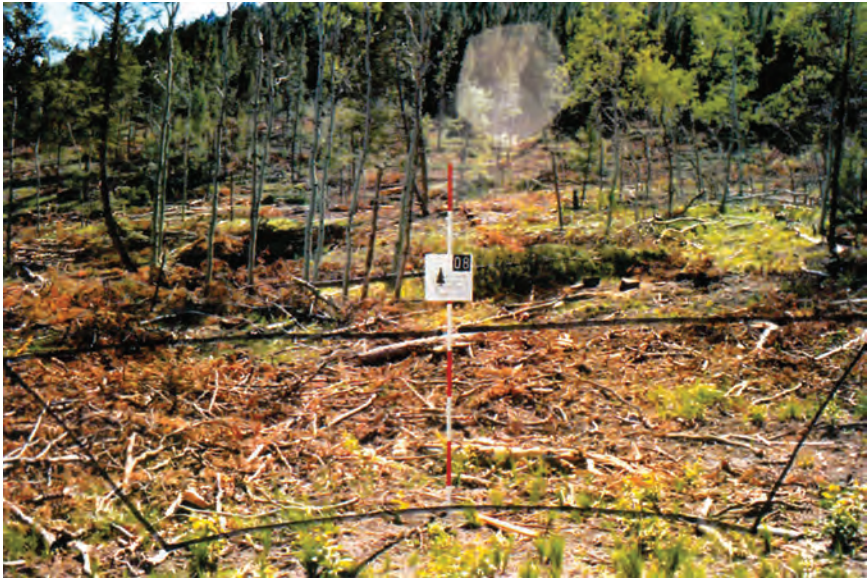


Stand Number 73

Needle Class: Long Needle

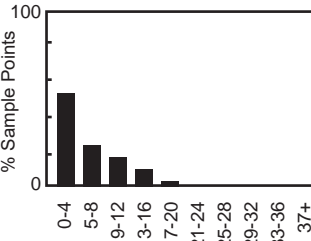
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths																							
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Sherman Gulch, Missoula, MT	% Slope	Flame Length (ft.)																						
Needles	1.0	Terrain Slope (%)	30	0	3																						
0-0.25	0.8	Aspect	Southeast	15	3																						
0.25-1.0	3.7	Yarding Method	Ground lead	30	3																						
1.0-3.0	6.8	Slash Treatment	Dozer piled	40	3																						
Subtotal 0-3	12.3	Flame Length (ft.)	3	60	4																						
Subtotal 3+	3.1			90	4																						
Total	15.4																										
Slash Composition		<div>Slash Depth Distribution (in.)</div> <table><thead><tr><th>Slash Depth (in.)</th><th>% Sample Points</th></tr></thead><tbody><tr><td>0-4</td><td>90</td></tr><tr><td>5-8</td><td>5</td></tr><tr><td>9-12</td><td>1</td></tr><tr><td>13-16</td><td>0</td></tr><tr><td>17-20</td><td>0</td></tr><tr><td>21-24</td><td>0</td></tr><tr><td>25-28</td><td>0</td></tr><tr><td>29-32</td><td>0</td></tr><tr><td>33-36</td><td>0</td></tr><tr><td>37+</td><td>0</td></tr></tbody></table>		Slash Depth (in.)	% Sample Points	0-4	90	5-8	5	9-12	1	13-16	0	17-20	0	21-24	0	25-28	0	29-32	0	33-36	0	37+	0	Comments: Residual slash was crushed during piling.	
Slash Depth (in.)	% Sample Points																										
0-4	90																										
5-8	5																										
9-12	1																										
13-16	0																										
17-20	0																										
21-24	0																										
25-28	0																										
29-32	0																										
33-36	0																										
37+	0																										
Species	Percent																										
Ponderosa pine	80																										
Douglas-fir	20																										





Stand Number 08

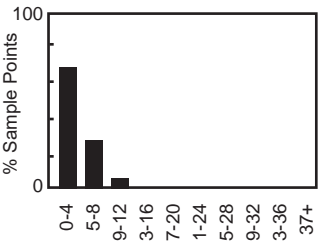
Needle Class: Long Needle

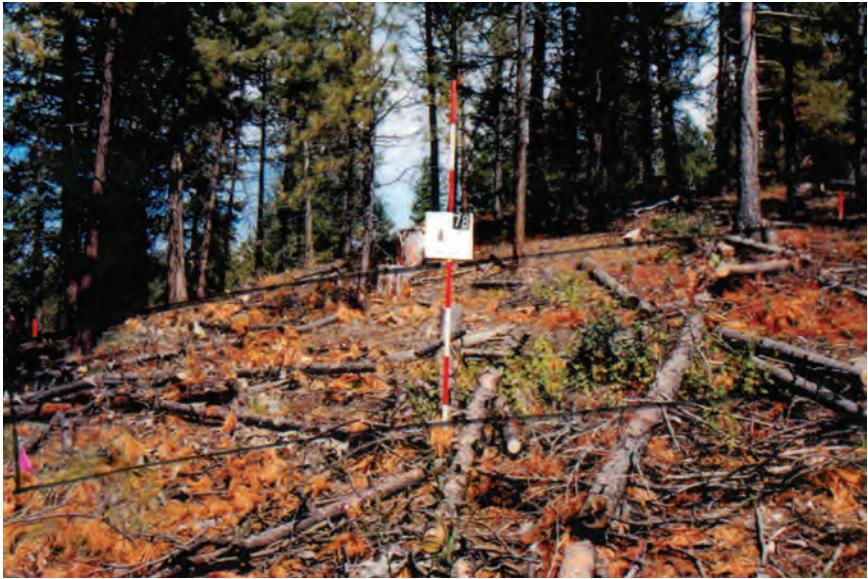
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Rocker, MT	% Slope	Flame Length (ft.)
		Terrain Slope (%)	18		
Needles	1.4	Aspect	East	0	3
0-0.25	2.6	Yarding Method	Ground lead	15	3
0.25-1.0	6.6	Slash Treatment	None	30	3
1.0-3.0	8.7	Flame Length (ft.)	3	40	3
Subtotal 0-3	19.3			60	4
Subtotal 3+	9.2			90	5
Total	28.5				
Slash Composition		Slash Depth Distribution (in.)		Comments: Area within plot was trampled with dozer. Flame length rating represents <u>only</u> the area within the plot.	
Species	Percent				
Lodgepole pine	100				



Stand Number 76

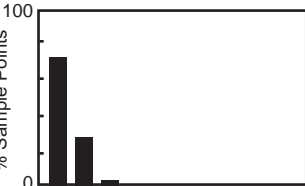
Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths																						
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Albert Creek, Missoula, MT	% Slope	Flame Length (ft.)																					
Needles	2.4	Terrain Slope (%)	45	0	3																					
0-0.25	0.5	Aspect	Southeast	15	3																					
0.25-1.0	4.4	Yarding Method	Ground lead	30	4																					
1.0-3.0	4.8	Slash Treatment	Lopped	40	4																					
Subtotal 0-3	12.1	Flame Length (ft.)	4	60	4																					
Subtotal 3+	3.8			90	5																					
Total	15.9																									
Slash Composition		<div>Slash Depth Distribution (in.)</div>  <table><thead><tr><th>Slash Depth (in.)</th><th>% Sample Points</th></tr></thead><tbody><tr><td>0-4</td><td>75</td></tr><tr><td>5-8</td><td>25</td></tr><tr><td>9-12</td><td>5</td></tr><tr><td>13-16</td><td>0</td></tr><tr><td>17-20</td><td>0</td></tr><tr><td>21-24</td><td>0</td></tr><tr><td>25-28</td><td>0</td></tr><tr><td>29-32</td><td>0</td></tr><tr><td>33-36</td><td>0</td></tr><tr><td>37+</td><td>0</td></tr></tbody></table>		Slash Depth (in.)	% Sample Points	0-4	75	5-8	25	9-12	5	13-16	0	17-20	0	21-24	0	25-28	0	29-32	0	33-36	0	37+	0	Comments: Slash was topped to approx. 12".
Slash Depth (in.)	% Sample Points																									
0-4	75																									
5-8	25																									
9-12	5																									
13-16	0																									
17-20	0																									
21-24	0																									
25-28	0																									
29-32	0																									
33-36	0																									
37+	0																									
Species	Percent																									
Ponderosa pine	80																									
Douglas-fir	20																									

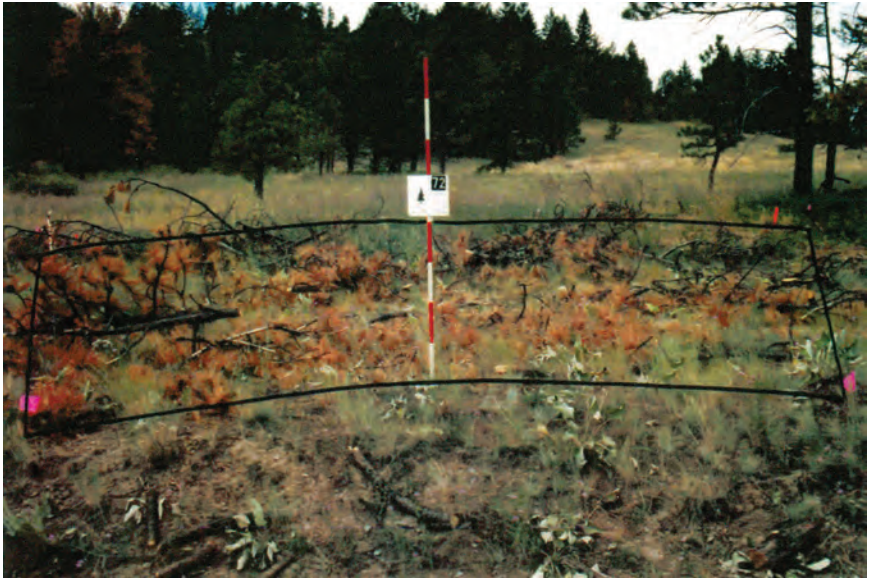


Stand Number 78

Needle Class: Long Needle

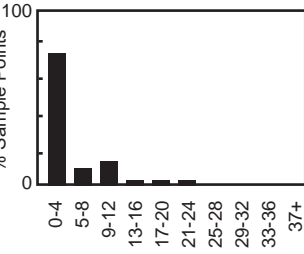
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Albert Creek, Missoula, MT	% Slope	Flame Length (ft.)
Needles	2.9	Terrain Slope (%)	35	0	4
0-0.25	0.8	Aspect	South	15	4
0.25-1.0	5.5	Yarding Method	Ground lead	30	4
1.0-3.0	4.4	Slash Treatment	Lopped	40	4
Subtotal 0-3	13.6	Flame Length (ft.)	4	60	5
Subtotal 3+	12.2	<div>Slash Depth Distribution (in.)</div> 		90	6
Total	25.8			Comments: Slash was lopped to approx. 12".	
Slash Composition					
Species	Percent				
Ponderosa pine	60				
Douglas-fir	40				





Stand Number 72

Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths																							
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Dry Gulch, Missoula, MT	% Slope	Flame Length (ft.)																						
Needles	2.5	Terrain Slope (%)	10	0	4																						
0-0.25	0.1	Aspect	Southeast	15	4																						
0.25-1.0	2.6	Yarding Method	Ground lead	30	4																						
1.0-3.0	4.1	Slash Treatment	Lopped	40	4																						
Subtotal 0-3	9.3	Flame Length (ft.)	4	60	5																						
Subtotal 3+	1.7			90	6																						
Total	11.0																										
Slash Composition		<div>Slash Depth Distribution (in.)</div>  <table border="1"><caption>Slash Depth Distribution Data</caption><thead><tr><th>Slash Depth (in.)</th><th>% Sample Points</th></tr></thead><tbody><tr><td>0-4</td><td>75</td></tr><tr><td>5-8</td><td>10</td></tr><tr><td>9-12</td><td>15</td></tr><tr><td>13-16</td><td>2</td></tr><tr><td>17-20</td><td>2</td></tr><tr><td>21-24</td><td>2</td></tr><tr><td>25-28</td><td>0</td></tr><tr><td>29-32</td><td>0</td></tr><tr><td>33-36</td><td>0</td></tr><tr><td>37+</td><td>0</td></tr></tbody></table>		Slash Depth (in.)	% Sample Points	0-4	75	5-8	10	9-12	15	13-16	2	17-20	2	21-24	2	25-28	0	29-32	0	33-36	0	37+	0	Comments: Slash consists of scattered tops and branches. Flame length rating represents <u>only</u> the area within the plot.	
Slash Depth (in.)	% Sample Points																										
0-4	75																										
5-8	10																										
9-12	15																										
13-16	2																										
17-20	2																										
21-24	2																										
25-28	0																										
29-32	0																										
33-36	0																										
37+	0																										
Species	Percent																										
Ponderosa pine	100																										



Stand Number 85

Needle Class: Long Needle

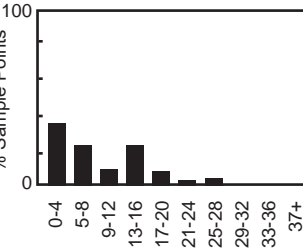
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths																							
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Camas Prairie, Potomac, MT	% Slope	Flame Length (ft.)																						
Needles	0.7	Terrain Slope (%)	6	0	4																						
0-0.25	0.7	Aspect	East	15	4																						
0.25-1.0	5.0	Yarding Method	Ground lead	30	4																						
1.0-3.0	5.8	Slash Treatment	Lopped	40	4																						
Subtotal 0-3	12.2	Flame Length (ft.)	4	60	5																						
Subtotal 3+	4.2			90	6																						
Total	16.4																										
Slash Composition		<div>Slash Depth Distribution (in.)</div> <table><thead><tr><th>Slash Depth (in.)</th><th>% Sample Points</th></tr></thead><tbody><tr><td>0-4</td><td>30</td></tr><tr><td>5-8</td><td>30</td></tr><tr><td>9-12</td><td>10</td></tr><tr><td>13-16</td><td>5</td></tr><tr><td>17-20</td><td>0</td></tr><tr><td>21-24</td><td>0</td></tr><tr><td>25-28</td><td>2</td></tr><tr><td>29-32</td><td>3</td></tr><tr><td>33-36</td><td>0</td></tr><tr><td>37+</td><td>0</td></tr></tbody></table>		Slash Depth (in.)	% Sample Points	0-4	30	5-8	30	9-12	10	13-16	5	17-20	0	21-24	0	25-28	2	29-32	3	33-36	0	37+	0	Comments: Lopping reduced slash depth.	
Slash Depth (in.)	% Sample Points																										
0-4	30																										
5-8	30																										
9-12	10																										
13-16	5																										
17-20	0																										
21-24	0																										
25-28	2																										
29-32	3																										
33-36	0																										
37+	0																										
Species	Percent																										
Ponderosa pine	70																										
Douglas-fir	30																										





Stand Number 62

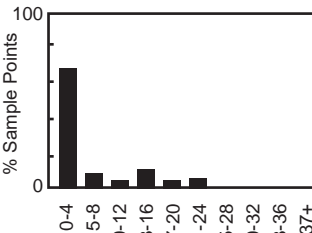
Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Lockwood Point, Bonner, MT	% Slope	Flame Length (ft.)
Needles	1.6	Terrain Slope (%)	45	0	4
0-0.25	1.8	Aspect	Southeast	15	4
0.25-1.0	5.2	Yarding Method	Cable	30	4
1.0-3.0	9.5	Slash Treatment	Lopped	40	4
Subtotal 0-3	18.1	Flame Length (ft.)	5	60	5
Subtotal 3+	23.7			90	7
Total	41.8				
Slash Composition		Slash Depth Distribution (in.)		Comments: Lopping reduced flame length rating such that 4' standard was met in most cases. Lopping to 18" reduces flame length an additional 1'.	
Species	Percent				
Ponderosa pine	90				
Douglas-fir	10				



Stand Number 64

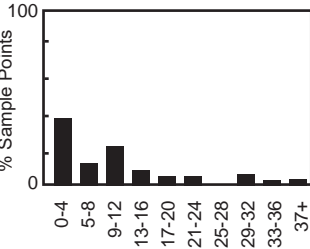
Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Deer Creek, MT	% Slope	Flame Length (ft.)
		Terrain Slope (%)	58		
Needles	1.5	Aspect	Southeast	0	4
0-0.25	0.1	Yarding Method	Cable	15	4
0.25-1.0	2.9	Slash Treatment	None	30	4
1.0-3.0	5.7	Flame Length (ft.)	5	40	5
Subtotal 0-3	10.2			60	5
Subtotal 3+	65.4			90	6
Total	75.6				
Slash Composition		Slash Depth Distribution (in.)		Comments:	
Species	Percent				
Ponderosa pine	95				
Douglas-fir	5				



Stand Number 53

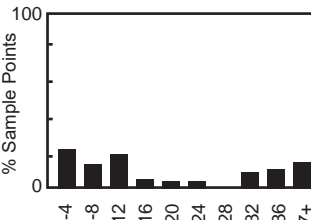
Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Flathead Pass, Bozeman, MT	% Slope	Flame Length (ft.)
Needles	0.9	Terrain Slope (%)	25	0	5
0-0.25	1.2	Aspect	East	15	5
0.25-1.0	4.2	Yarding Method	Ground lead	30	5
1.0-3.0	8.0	Slash Treatment	Dozer crushed	40	6
Subtotal 0-3	14.3	Flame Length (ft.)	5	60	6
Subtotal 3+	27.1			90	7
Total	41.4				
Slash Composition		Slash Depth Distribution (in.)		Comments: Unit was partially crushed with dozers. Lopping to 24" decreases flame length 1'.	
Species	Percent				
Ponderosa pine	90				
Douglas-fir	10				

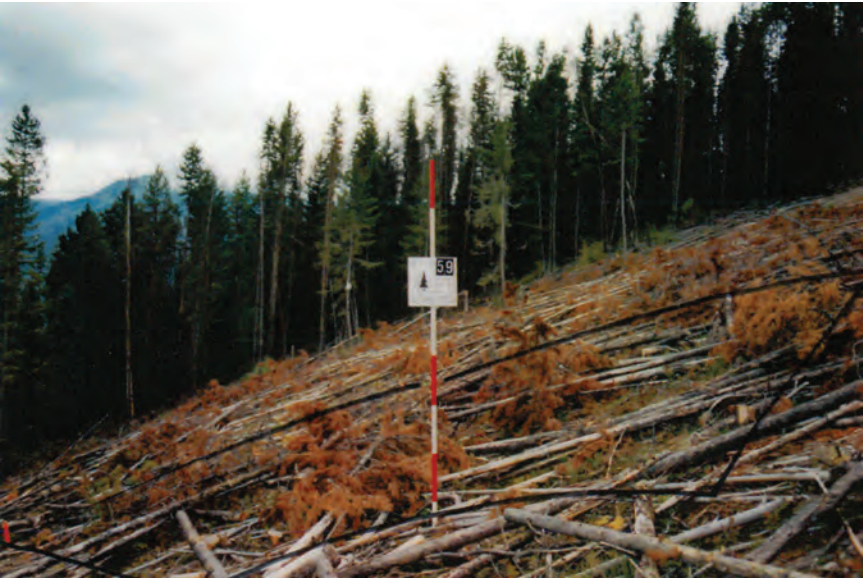


Stand Number 32

Needle Class: Long Needle

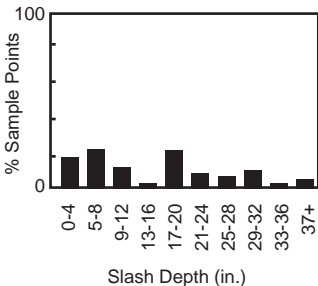
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Rogers Pass, Lincoln, MT	% Slope	Flame Length (ft.)
Needles	1.1	Terrain Slope (%)	35	0	6
0-0.25	1.8	Aspect	Northeast	15	6
0.25-1.0	6.0	Yarding Method	Ground lead	30	6
1.0-3.0	5.3	Slash Treatment	None	40	6
Subtotal 0-3	14.2	Flame Length (ft.)	6	60	7
Subtotal 3+	25.1			90	9
Total	39.3				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash Depths contributed to high flame length rating. Lopping to 24" reduces slash depth; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.	
Species	Percent				





Stand Number 59

Needle Class: Long Needle

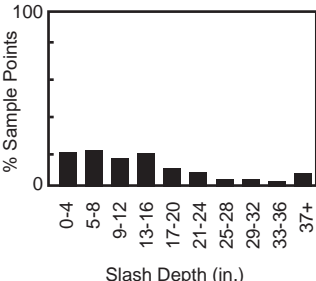
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Burnt Fork, Stevensville, MT	% Slope	Flame Length (ft.)
Needles	1.2	Terrain Slope (%)	38	0	6
0-0.25	1.7	Aspect	East	15	6
0.25-1.0	6.4	Yarding Method	Ground lead	30	6
1.0-3.0	19.5	Slash Treatment	None	40	6
Subtotal 0-3	28.8	Flame Length (ft.)	6	60	7
Subtotal 3+	4.6			90	8
Total	33.4				
Slash Composition		Slash Depth Distribution (in.)		Comments: : Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depth; this decreases flame length 2'.	
Species	Percent				
Lodgepole pine	100				

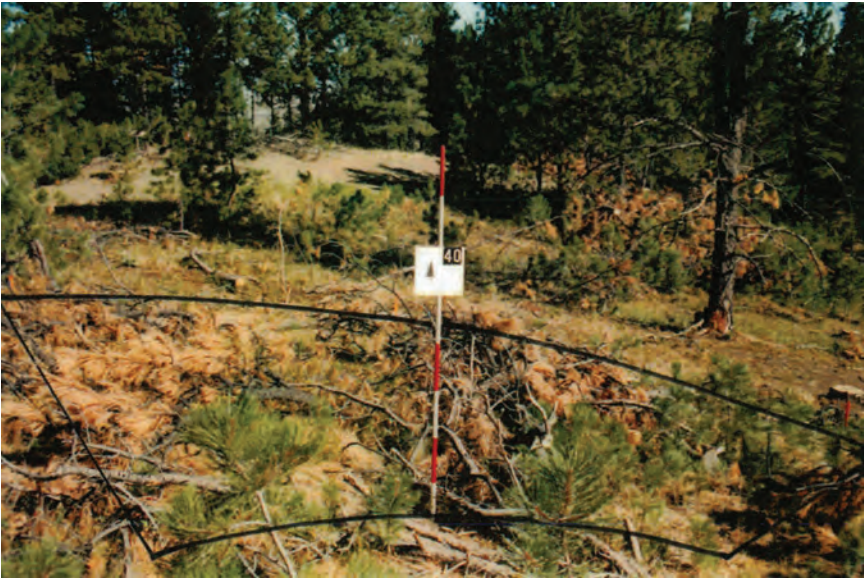




Stand Number 58

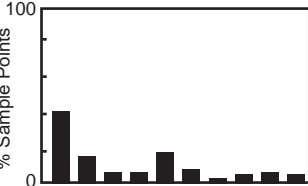
Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Burnt Fork, Stevensville, MT	% Slope	Flame Length (ft.)
Needles	0.7	Terrain Slope (%)	22	0	6
0-0.25	2.0	Aspect	Northeast	15	6
0.25-1.0	7.3	Yarding Method	Ground lead	30	6
1.0-3.0	20.1	Slash Treatment	None	40	7
Subtotal 0-3	30.1	Flame Length (ft.)	8	60	7
Subtotal 3+	0.6			90	8
Total	30.7				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depth; this decreases flame length 2'. Flame length ratings apply <u>only</u> to area within plot boundary.	
Species	Percent				
Lodgepole pine	100				



Stand Number 40

Needle Class: Long Needle

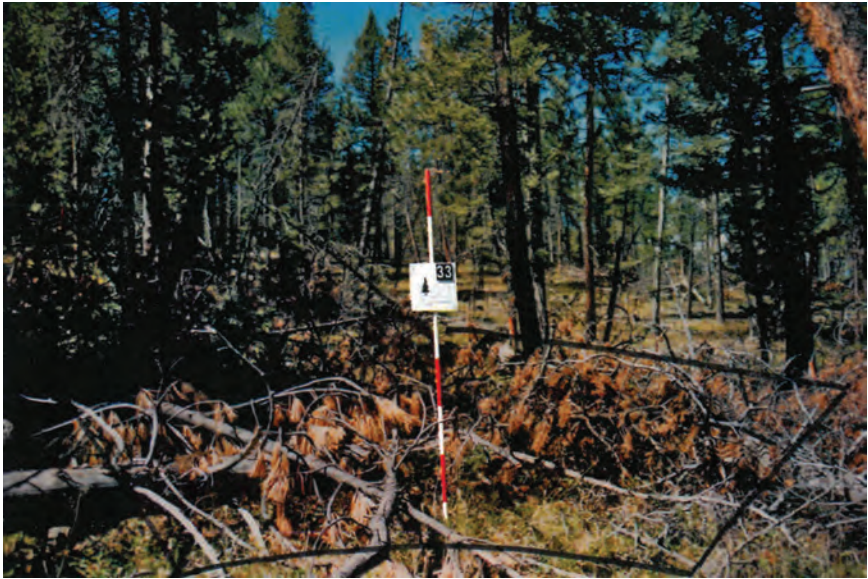
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths		
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Snowy Mountains, Lewistown, MT	% Slope	Flame Length (ft.)	
Needles	2.3	Terrain Slope (%)	25	0	6	
0-0.25	1.3	Aspect	East	15	6	
0.25-1.0	3.4	Yarding Method	Ground lead	30	6	
1.0-3.0	6.2	Slash Treatment	None	40	7	
Subtotal 0-3	13.2	Flame Length (ft.)	6	60	8	
Subtotal 3+	0.6			90	9	
Total	13.8					
Slash Composition		Slash Depth Distribution (in.)				
Species	Percent				Comments: Slash depths contributed to high flame length rating. Lopping reduces slash depth; this decreases flame length. Lopping to 24" decreases flame length 1'; lopping to 18" decreases flame length an additional 1'. Flame length rating applies <u>only</u> to area within plot boundary.	
Ponderosa pine	100					



Stand Number 39

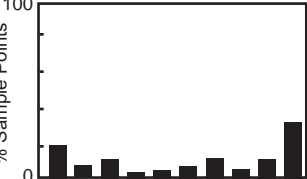
Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Snowy Mountains, Lewistown, MT	% Slope	Flame Length (ft.)
Needles	3.0	Terrain Slope (%)	5	0	6
0-0.25	1.5	Aspect	North	15	6
0.25-1.0	4.7	Yarding Method	Ground lead	30	7
1.0-3.0	11.4	Slash Treatment	None	40	7
Subtotal 0-3	20.6	Flame Length (ft.)	6	60	8
Subtotal 3+	4.9			90	10
Total	25.5				
Slash Composition		Slash Depth Distribution (in.) 			
Species	Percent	Comments: Slash depths and 0-3" fuel loading contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.			
Ponderosa pine	100				

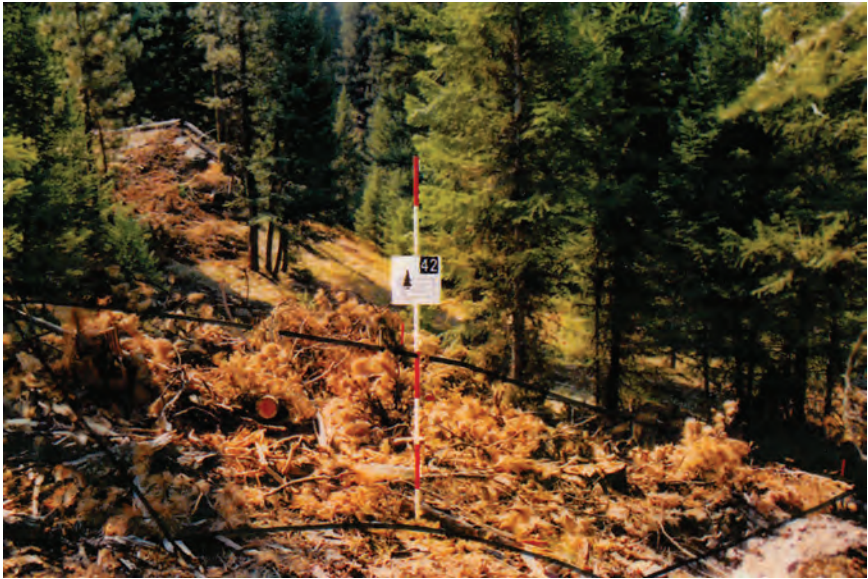


Stand Number 33

Needle Class: Long Needle

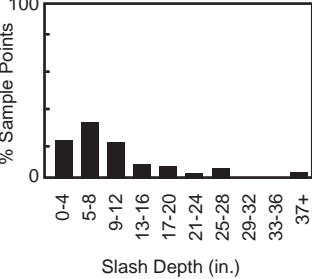
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Rogers Pass, Lincoln, MT	% Slope	Flame Length (ft.)
Needles	2.3	Terrain Slope (%)	15	0	6
0-0.25	2.6	Aspect	East	15	6
0.25-1.0	6.8	Yarding Method	Ground lead	30	7
1.0-3.0	12.0	Slash Treatment	None	40	7
Subtotal 0-3	23.7	Flame Length (ft.)	6	60	8
Subtotal 3+	37.4	<div>Slash Depth Distribution (in.)</div> 		90	10
Total	61.1				
Slash Composition		<div>Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.</div>			
Species	Percent				
Lodgepole pine	70				
Ponderosa pine	30				



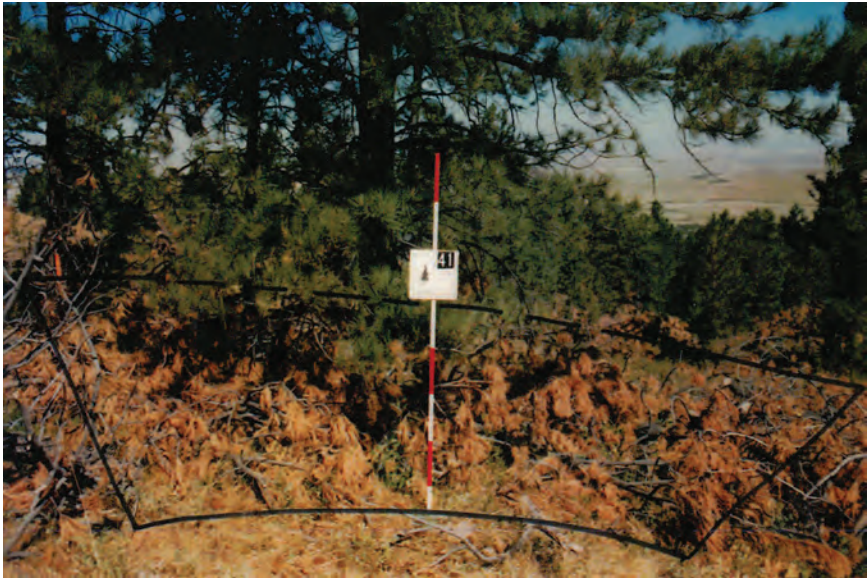


Stand Number 42

Needle Class: Long Needle

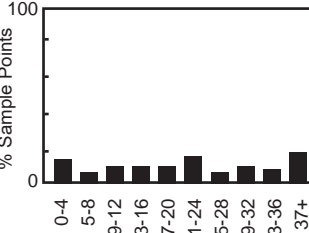
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Snowy Mountains, Lewistown, MT	% Slope	Flame Length (ft.)
Needles	2.5	Terrain Slope (%)	30	0	6
0-0.25	2.4	Aspect	Southwest	15	7
0.25-1.0	4.8	Yarding Method	Ground lead	30	7
1.0-3.0	9.8	Slash Treatment	None	40	7
Subtotal 0-3	19.5	Flame Length (ft.)	7	60	8
Subtotal 3+	5.9			90	10
Total	25.4				
Slash Composition		Slash Depth Distribution (in.) 			
Species	Percent	Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.			
Ponderosa pine	60				
Douglas-fir	40				

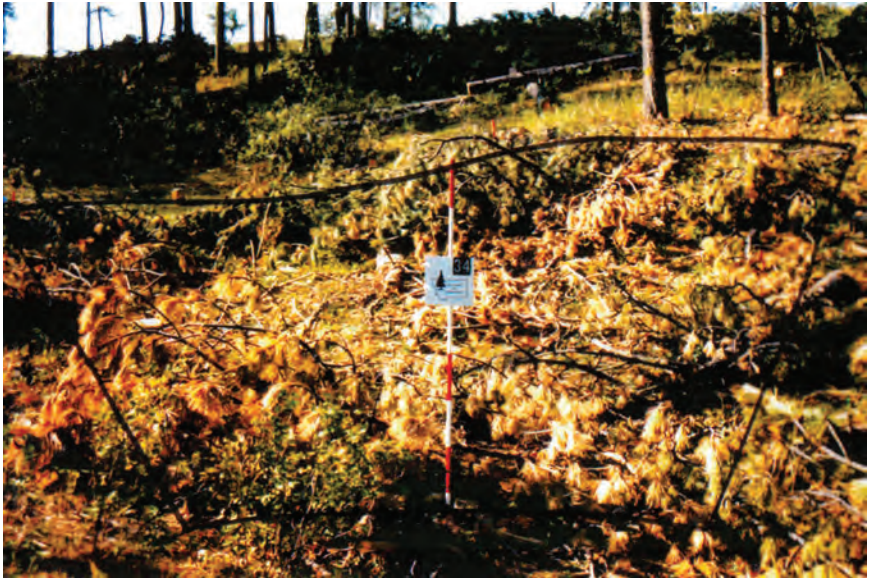




Stand Number 41

Needle Class: Long Needle

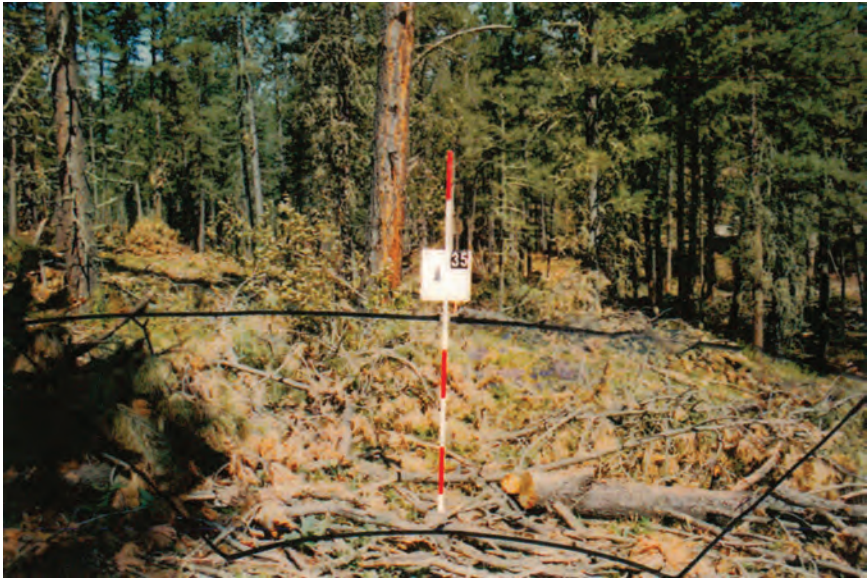
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Snowy Mountains, Lewistown, MT	% Slope	Flame Length (ft.)
Needles	3.3	Terrain Slope (%)	15	0	7
0-0.25	2.0	Aspect	North	15	7
0.25-1.0	4.7	Yarding Method	Ground lead	30	7
1.0-3.0	11.3	Slash Treatment	None	40	8
Subtotal 0-3	21.3	Flame Length (ft.)	7	60	9
Subtotal 3+	12.5			90	11
Total	33.8				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.	
Species	Percent				
Ponderosa pine	100				



Stand Number 34

Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Snowy Mountains, Lewistown, MT	% Slope	Flame Length (ft.)
Needles	3.4	Terrain Slope (%)	28	0	7
0-0.25	1.8	Aspect	East	15	7
0.25-1.0	5.2	Yarding Method	Ground lead	30	7
1.0-3.0	11.8	Slash Treatment	None	40	8
Subtotal 0-3	22.2	Flame Length (ft.)	7	60	9
Subtotal 3+	4.9			90	11
Total	27.1				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.	
Species	Percent				
Ponderosa pine	100				

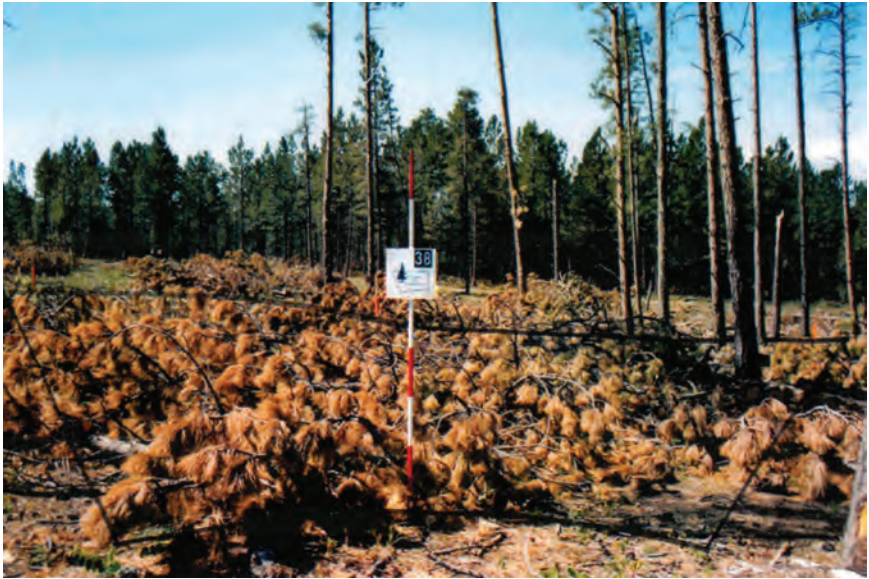


Stand Number 35

Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Snowy Mountains, Lewistown, MT	% Slope	Flame Length (ft.)
Needles	3.9	Terrain Slope (%)	28	0	7
0-0.25	2.2	Aspect	Northeast	15	7
0.25-1.0	5.8	Yarding Method	Ground lead	30	8
1.0-3.0	13.7	Slash Treatment	None	40	8
Subtotal 0-3	25.6	Flame Length (ft.)	8	60	9
Subtotal 3+	16.6			90	11
Total	42.2				
Slash Composition		Slash Depth Distribution (in.)			
Species	Percent	Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.			
Ponderosa pine	100				

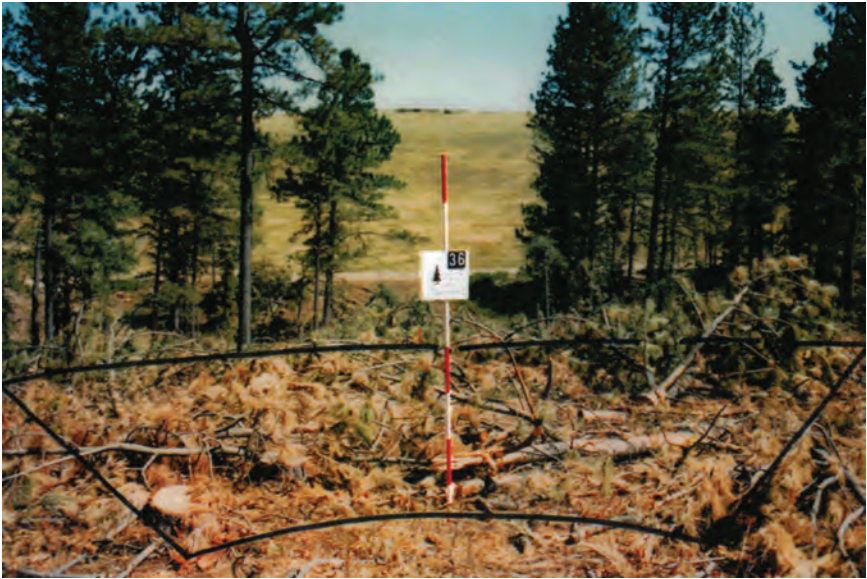




Stand Number 38

Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Snowy Mountains, Lewistown, MT	% Slope	Flame Length (ft.)
Needles	4.1	Terrain Slope (%)	0	0	7
0-0.25	1.7	Aspect	(flat)	15	7
0.25-1.0	6.6	Yarding Method	Ground lead	30	8
1.0-3.0	13.5	Slash Treatment	None	40	8
Subtotal 0-3	25.9	Flame Length (ft.)	7	60	9
Subtotal 3+	5.4			90	12
Total	31.3				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.	
Species	Percent				
Ponderosa pine	100				



Stand Number 36

Needle Class: Long Needle

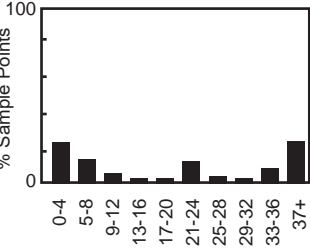
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Snowy Mountains, Lewistown, MT	% Slope	Flame Length (ft.)
Needles	3.9	Terrain Slope (%)	14	0	7
0-0.25	2.0	Aspect	East	15	7
0.25-1.0	5.9	Yarding Method	Ground lead	30	8
1.0-3.0	12.4	Slash Treatment	None	40	8
Subtotal 0-3	24.2	Flame Length (ft.)	7	60	10
Subtotal 3+	9.8			90	12
Total	34.0				
Slash Composition		Slash Depth Distribution (in.)			
Species	Percent	Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.			
Ponderosa pine	100				





Stand Number 25

Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Libby, MT	% Slope	Flame Length (ft.)
Needles	5.1	Terrain Slope (%)	47		
0-0.25	2.4	Aspect	South	0	8
0.25-1.0	8.0	Yarding Method	Ground lead	15	8
1.0-3.0	18.9	Slash Treatment	None	30	8
Subtotal 0-3	34.4	Flame Length (ft.)	9	40	9
Subtotal 3+	20.0			60	10
Total	54.4			90	12
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 2'.	
Species	Percent				
Ponderosa pine	100				



Stand Number 31

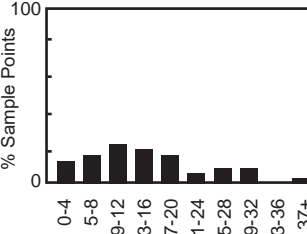
Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Rogers Pass, Lincoln, MT	% Slope	Flame Length (ft.)
Needles	4.3	Terrain Slope (%)	32	0	8
0-0.25	2.2	Aspect	South	15	8
0.25-1.0	6.5	Yarding Method	Ground lead	30	9
1.0-3.0	11.1	Slash Treatment	None	40	9
Subtotal 0-3	24.1	Flame Length (ft.)	9	60	11
Subtotal 3+	13.9			90	13
Total	38.0				
Slash Composition		<div>Slash Depth Distribution (in.)</div>		<p>Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'</p>	
Species	Percent				
Ponderosa pine	100				

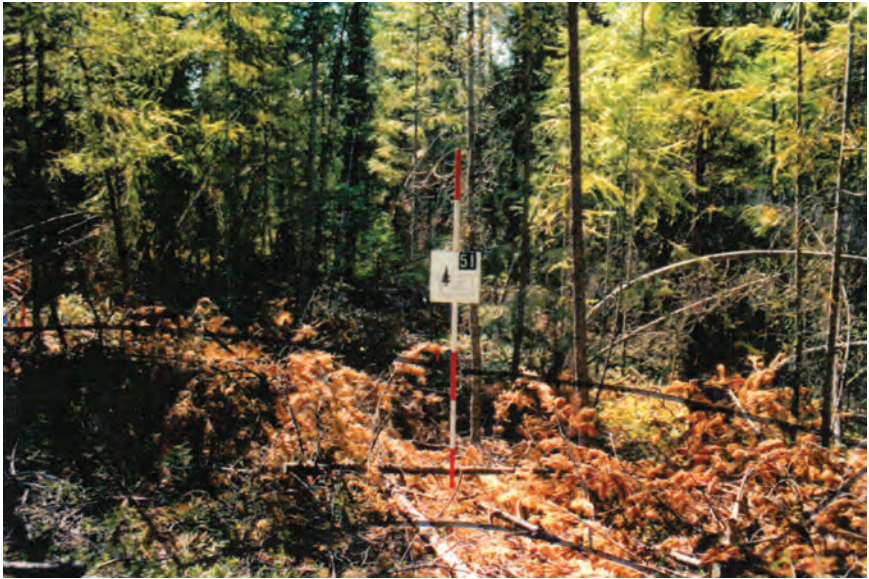


Stand Number 52

Needle Class: Long Needle

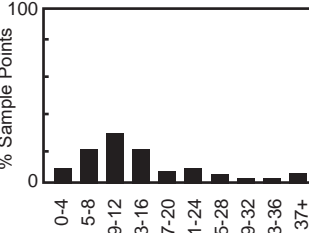
Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Olney, MT	% Slope	Flame Length (ft.)
		Terrain Slope (%)	5		
Needles	2.1	Aspect	(flat)	0	8
0-0.25	5.4	Yarding Method		15	9
0.25-1.0	7.4	Slash Treatment	None	30	9
1.0-3.0	13.5	Flame Length (ft.)	8	40	10
Subtotal 0-3	28.4			60	11
Subtotal 3+	0.6			90	14
Total	29.0				
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.	
Species	Percent				
Lodgepole pine	90				
Douglas-fir	10				





Stand Number 51

Needle Class: Long Needle

Down & Dead Fuel Loading		Photo Site Data		Potential Flame Lengths	
Size Class (inches)	Slash Weight (tons/acre)	Stand Location	Olney, MT	% Slope	Flame Length (ft.)
Needles	2.0	Terrain Slope (%)	15		
0-0.25	5.1	Aspect	West	0	8
0.25-1.0	8.3	Yarding Method		15	9
1.0-3.0	14.3	Slash Treatment	None	30	9
Subtotal 0-3	29.7	Flame Length (ft.)	9	40	10
Subtotal 3+	0.3			60	11
Total	30.0			90	14
Slash Composition		Slash Depth Distribution (in.)		Comments: Slash depths and 0-3" fuel loadings contributed to high flame length rating. Lopping to 24" reduces slash depths; this decreases flame length 1'. Lopping to 18" decreases flame length an additional 1'.	
Species	Percent				
Lodgepole pine	100				

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